REPORT RESUMES

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A STUDY OF VOCATIONAL AGRICULTURE IN THE SCHOOLS OF THE PHOENIX UNION HIGH SCHOOL SYSTEM.

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THE OBJECTIVES OF THE STUDY WERE TO (1) DETERMINE THE EFFECTIVENESS OF VOCATIONAL AGRICULTURE IN THE PHOENIX, ARIZONA, SCHOOLS, (2) IDENTIFY OCCUPATIONAL OPPORTUNITIES IN AGRICULTURE, (3) IDENTIFY ENROLLEE CHARACTERISTICS, (4) RECOMMEND VOCATIONAL AGRICULTURE OBJECTIVES AND CONTENT, (5) DETERMINE ENROLLMENT MOTIVES, AND (6) CHECK THE STATUS OF SLOW LEARNERS IN THE PROGRAM. THE STUDY INCLUDED A FOLLOWUP OF 55 FORMER ENROLLEES, AN OCCUPATIONAL OPPORTUNITY SURVEY, AN EXAMINATION OF STUDENT RECORDS FOR FORMER ENROLLEES, AND A 5 PERCENT SAMPLE OF CURRENT ENROLLEES IN NINE HIGH SCHOOLS TO COMPARE 36 FAMILY AND STUDENT CHARACTERISTICS, AND A VOCATIONAL INTERESTS SURVEY OF 80 STUDENTS IN THE PROGRAM. ALTHOUGH THE PROGRAM HAD NOT PLACED MANY IN AGRICULTURE AND THE ATTRITION RATE WAS HIGH, IT WAS EFFECTIVE IN FOSTERING EDUCATIONAL AND OCCUPATIONAL ASPIRATION IN STUDENTS. AGRICULTURAL EMPLOYMENT OPPORTUNITIES WERE DECLINING. THE FEW SLOW LEARNERS IN THE PROGRAM DID BETTER IN VOCATIONAL AGRICULTURE THAN IN OTHER SUBJECTS. STUDENT INTEREST IN VOCATIONAL AGRICULTURE WAS LIMITED. IT WAS RECOMMENDED THAT (1) MORE PRODUCTIVE STUDENT SELECTION TECHNIQUES BE INSTITUTED, (2) COUNSELORS BE BETTER INFORMED ABOUT THE PROGRAM, (3) MORE PUBLICITY BE GIVEN TO THE EARNINGS OF STUDENTS IN CONNECTION WITH THEIR PROJECTS, (4) EMPLOYMENT POTENTIAL BE STUDIED, (5) THE PROGRAM BE TAILORED TO NEEDS, AND (6) OPPORTUNITIES FOR COOPERATION WITH OTHER VOCATIONAL PROGRAMS BE STUDIED. (JM)

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A STUDY OF VOCATIONAL AGRICULTURE IN THE SCHOOLS OF THE PHOENIX UNION HIGH SCHOOL SYSTEM

JULY 1966

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A STUDY OF VOCATIONAL AGRICULTURE IN THE SCHOOLS OF THE PHOENIX UNION HIGH SCHOOL SYSTEM

CONDUCTED UNDER THE
AUSPICES OF
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INTRODUCTION

The agricultural industry of Arizona and specifically of Maricopa County has evolved and changed considerably during the past few years. The Board of Education of the Phoenix Union High School District has had a constant and long-term awareness of the necessity of periodic re-evaluation of the scope, content and role of the vocational agricultural education program in the system. For this reason, the Board of Education and the administrative staff of the Phoenix Union High School District have undertaken periodic appraisals and re-appraisals of the program as it is offered at the Phoenix Union High School.

In November of 1965 the school District requested that the Occupational Research Coordinating Unit, a division of Northern Arizona University, prepare a proposal for evaluation of the effectiveness of the Vocational Agriculture program as a part of the District's overall and constant evaluation. Subsequent to that date, the RCU submitted a tentative proposal to the school officials. In March of 1966 the Board of Education of the Phoenix Union High School District approved the scope and content of the survey and requested that the Research Coordinating Unit immediately undertake the project.

The specific objectives of this study were:

1. To identify, through a follow-up study of recent graduates, the effectiveness and usefulness of the vocational agricultural program of Phoenix Union High School;
2. To identify, through an economic survey of employment opportunities emerging requirements in occupations for which vocational agriculture or training in agricultural-related occupations may prepare high school terminal students;

3. To identify the personal and family characteristics of students who have been in the past, and are currently enrolled in vocational agricultural programs;
4. To make recommendations as to the direction and content of vocational agriculture and agriculturally-related programs in the schools of Phoenix Union High School System;
5. To determine the motivation of current students for studying vocational agriculture;
6. Check status of "slow learners" in vocational agriculture.

Section I of the following report consists of an analysis and appraisal of the effectiveness of the vocational agriculture program as it has existed in the past few years at Phoenix Union High School. This primarily is based upon an extensive and exhaustive follow-up study of past students of the program.

The Arizona State Employment Service, as a part of its continuing program of occupational industrial surveys and labor market information agreed to conduct a study of employment opportunities (objective 2 above). This study, to cover the Agriculture and Agricultural Services industry, would be supplemented by the Employment Service with information from the reports of the United States Bureau of Census, personal interviews to be conducted with the Farm Bureau; cattlemen; Salt River Water Users Association; major growers; agricultural distributors; farm implement, chemicals and supply manufacturers and distributors; and employers associations such as the Associated Landscape Contractors of America and professional associations including the American Landscape Architects Association. In addition, information previously assembled and analyzed by the Employment Service for purposes of research associated with Manpower Development and Training Act requests would be included. The Employment Service also would consider the research conducted by the University of Arizona, the Department of Agriculture and other schools and research agencies throughout the State. The results of the Employment Service survey constitutes Section II of this report.

Section III presents an exhaustive comparison of personal and family characteristics of the student bodies of the high schools of the Phoenix Union District. These data are presented on the assumption that the personal and family characteristics of the vocational agriculture students may well be of assistance in identifying potential future locations for vocational agriculture and/or horticulture programs in the schools of the Phoenix Union system. For this reason, the profiles of the vocational agriculture students who have taken courses in the past few years at Phoenix Union High School are compared with a scientifically selected random sample of students in all high schools of the system. An extensive tabular comparison of these characteristics is presented by an appendix to this report.

Section IV presents an analysis of student vocational interest. On the assumption that the interests of the students may very well be of primary concern in the curricula offerings of individual high schools, three schools have been analyzed to determine the vocational aspiration of the male students. These are: Maryvale High School, South Mountain High School and Phoenix Union High School.

Because of the interest of some educators in the effectiveness of vocational agriculture as an educational program for slow learners and under-achievers, Section V of this report has been included. This presents an analysis of the experience of the very small percentage of all students in vocational agriculture who would be classed in the slow learner category.

Section VI of this report presents the results of an inquiry into the causes and factors relating to an unusual increase in agriculture course enrollments at Phoenix Union High School during the second semester of 1965-1966 school year.

The final section of this report presents, in summary form, the findings and conclusions of the preceding sections. In addition, certain recommendations of a rather general nature have been brought forth for consideration by the administrative staff and the officials of the Phoenix Union High School System.

This research was conducted under the auspices of the Arizona Occupational Research Coordinating Unit. Principal Investigator was Mr. William A. Langbehn and primary research was under the direction of Miss Wilma Richard, a Consulting Research Specialist contracted specifically for the conduct of this study. Section II of this report was prepared by the Manpower Research Section of the Arizona State Employment Service. Appreciation is expressed to the staff and faculties of the high schools of the Phoenix Union High School System and particularly to Mr. W. E. Smith of the Vocational Agriculture Department of Phoenix Union High School. Without their cooperation, this study could not have been possible.

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SECTION I

THE EFFECTIVENESS OF THE VOCATIONAL AGRICULTURAL PROGRAM AT PHOENIX UNION HIGH SCHOOL, 1957 THROUGH 1965

The overall effectiveness of the vocational agriculture program at Phoenix Union High School is extremely limited if its primary purpose is to educate high school students for a vocation in agriculture. Though the Vocational Education Act of 1963 has been interpreted to broaden the scope of vocational agricultural programs to include training for off-farm agricultural related work, it is still required that the student entering such training shall have made an appropriate vocational choice.

The numbers of students from the "Classes" of 1961 through 1965 taking some agriculture at Phoenix Union High School and the number who completed a minimum of four semesters indicate a rather serious breakdown in vocational planning or in student selection. Table 1 illustrates that only 16% of those registering for courses in agriculture completed four semesters. Six of the 55 students who did complete four semesters, had

TABLE 1

NUMBER OF STUDENTS FROM "CLASSES" OF 1961 THROUGH 1965 WHO REGISTERED FOR ONE OR MORE COURSES IN AGRICULTURE

	General Agriculture Only	Vocational Agriculture	TOTAL
NUMBER REGISTERED	143	211	354
NUMBER COMPLETING AT LEAST ONE COURSE	101	186	287
NUMBER COMPLETING FOUR SEMESTERS*	0	55	55
PERCENT COMPLETING ONE COURSE	71	88	81
PERCENT COMPLETING FOUR SEMESTERS	0	26	16

*Many of those taking vocational agriculture also took general agriculture but are shown only in the vocational agriculture column to avoid duplication.

less than four semesters of academic agricultural classwork, but had two or more agricultural projects. This history of doubtful student selection was continued to an even more startling degree in the second semester of the 1965-1966 school year and an analysis of the new agriculture students is contained in Section VI of this report.

During the eight-year period from 1957-58 through 1964-65, a total of 559 individual students from all graduating classes were registered in at least one agricultural course. Of these, 354 were in the "Classes" of 1961 through 1965. (A total of 21 students not in the classes of 1961 through 1965 completed four or more semesters of agriculture during the eight-year period.) On the average, these were 69.9 students enrolled per year during the period. An average of only 13.6 students per "class" completed four semesters of course work and projects.

The vocational agriculture program appears to have very beneficial side effects for those few students who do complete four semesters or more, though only a small proportion are working at present in agriculture according to a follow-up study conducted during March and April, 1966.

A total of 55 students were identified who met the following criteria:

1. In the "Classes" of 1961 through 1965
2. Completed four semesters or more of agriculture in high school
3. Not now a regular student at any high school in the Phoenix Union High School System

A questionnaire was mailed to each of the 55 former students identified. Nine questionnaires were returned by mail and the information for an additional 35 students was obtained by telephone or personal visit with parents or other family members. This represents an 80% response. (Every effort was made to reach the remaining 11 but to no avail.) A copy of the questionnaire is presented as an appendix to this report.

Responses to questionnaires showed the length of attendance at Phoenix Union High School to be: 1½ years--1; 2 years--8; 3 years--7; 4 years or more--28. Eighty-nine percent (40 students) had graduated from high school (one considered graduated received his equivalency certificate through G.E.D.) Although 13 (30%) left Phoenix Union High School before graduating, of the total 75% continued their education after leaving Phoenix Union High School. Table 2 presents the highest level of continued education reported by the responding individuals. Since nine are known to have continued high school and only three are shown in the Other High School category, six of these have had additional schooling after completing high school.

TABLE 2

TYPE OF CONTINUED EDUCATION AFTER LEAVING
PHOENIX UNION HIGH SCHOOL

Kind of School	Total	Currently Enrolled
College or University	6	2
Junior College	15	7
Vocational School	1	1
Correspondence School	1	--
Military School	2	1
Other High School	3	--
Night School	3	2
Other	3	--

Table 3 lists the present activity status of the former vocational agricultural students by "Class". The one shown as "Not Employed" in the Class of 1965, is not unemployed--just not in the labor market at present (according to his mother). He usually works, but has not settled on a specific occupation as yet.

It is apparent from the number who have continued their education since leaving high school (75%) that something about the vocational agriculture program fosters the ambition to finish high school, take additional vocational training, or go on to college. According to the Annual Report of the Superintendent of the Phoenix Union High School System, for the 1964-65 year, 51% of the 1964 graduates of Phoenix Union High School were continuing their education. Of 11 vocational agricultural students graduating in 1964, nine (82%) have continued their education--7 at the junior college or university level and two in vocational schools. All but two of the responding 12 vocational-agriculture seniors in 1964 graduated and another graduated in January 1965, bringing the total to 92%--a very high percentage for any high school senior class.

Of the 34 responding former students not now in military service, all but one was employed or in school. Eight of the ten in school were also working part time. The one not working and not in school, usually worked and was not actually unemployed; but even if he were, the percentage of unemployment would be only 3.0--far below National and State estimates for unemployment among 18 and 19-year old youth.

Table 4 contains a detailed compilation of current and previous employment by occupational and industrial group. All but six of the 44 respondents either have or have had a job. Each of the six who reported never having a job are in military service. Among the 38 reporting a

TABLE 3

CURRENT ACTIVITY BY "CLASS" OF FORMER VOCATIONAL AGRICULTURAL STUDENTS

Activity	1961	1962	1963	1964	1965	Total
Agriculture and agriculture related	-	2	-	-	2	4
Professional and managerial	1	-	1	1	-	3
Clerical and sales	1	-	-	1	-	2
Service	1	1	-	1	-	3
Skilled	-	3	2	1	-	6
Semiskilled	1	1	1	1	1	5
Student	1	2	1	4	2	10
In Military	0	1	2	3	4	10
Not Employed	-	-	-	-	1	1
TOTAL	5	10	7	12	10	44

TABLE 4

OCCUPATION AND INDUSTRY OF CURRENT EMPLOYMENT AND PREVIOUS EMPLOYMENT BY CURRENT ACTIVITY OF VOCATIONAL AGRICULTURE STUDENTS

CURRENT EMPLOYMENT (INDIVIDUALS)				PREVIOUS EMPLOYMENT (RESPONSES)				
OCCUPATION	Full Time	Part Time	Total	Employed Full Time	In Military Service	In School	Other	Total
Agricultural	4	0	4	5	2	3	1	11
Professional & Managerial	3	1	4	1	0	0	0	1
Sales and Clerical	2	1	3	5	1	1	1	8
Service	3	3	6	4	1	0	0	5
Skilled	6	1	7	0	0	0	0	0
Semiskilled	5	1	6	5	3	4	1	13
Unskilled	0	1	1	2	0	2	0	4
None	0	0	0	9	6	3	0	18
TOTAL	23	8	31	31	13	13	3	60
INDUSTRY								
Agriculture	2	0	2	6	2	2	1	11
Agricultural & Related Services	2	1	3	0	0	2	0	2
Construction	2	2	4	1	0	2	0	3
Government	4	0	4	4	1	0	0	5
Manufacturing	6	0	6	1	1	1	0	3
Other Services	2	2	4	0	1	0	0	1
Trade	5	2	7	11	2	3	1	17
Other*	0	1	1	1	0	0	1	2
None	0	0	0	7	6	3	0	16
TOTAL	23	8	31	31	13	13	3	60

*Other includes Finance, Transportation and Communications.

job: 12 have had only one job (ten, the one they have now, one service man and one student who had one previous job); 13 have had at least one other job before present work; eight have had at least two jobs other then their present employment; and five had at least four jobs including their present one.

Though only five are working in agricultural occupations and/or agricultural related industry, 12 others have previously done agricultural or related work (one now farming for himself reported a previous agricultural job.) In addition to these 17, four more work or have worked in other occupations or industries for which agricultural training is helpful. This brings the total of those working or having worked in agriculture or agricultural related occupations and/or industries to 21 (48%). This 48% cannot be found in Table 5, showing the per cent distribution of current and previous employment by occupation and industry, as four are shown in other occupations and industries not wholly related to agriculture. These occupations and industries include one currently employed and one previously employed doing delivery and general work in florist shops (semiskilled in trade industry), one employed as a fireguard in the Forest Service (service work in government), and one employed as a butcher in a meat packing plant (skilled in manufacturing).

It is interesting to note that not one of those working full time are in unskilled jobs. The agricultural occupations in which four are involved full time include self-employed farming, wage and salaried farm work, groundskeeper at a school, and self-employed in the sale and application of insecticides and fertilizers on farms. Table 6 presents the occupations in which the former students are or have been engaged.

TABLE 5

PERCENT DISTRIBUTION BY OCCUPATION AND INDUSTRY OF CURRENT EMPLOYMENT BY CURRENT ACTIVITY OF FORMER VOCATIONAL AGRICULTURE STUDENTS

CURRENT EMPLOYMENT (INDIVIDUALS)				PREVIOUS EMPLOYMENT (RESPONSES)				
OCCUPATION	Full Time	Part Time	Total	Employed Full Time	In Military Service	In School	Other	Total
Agricultural	17	0	13	16	15	23	33	18
Professional & Managerial	13	12	13	3	0	0	0	2
Sales and Clerical	9	12	10	16	8	8	33	13
Service	13	38	19	13	8	0	0	8
Skilled	26	12	23	0	0	0	0	0
Semiskilled	22	12	19	16	23	30	33	22
Unskilled	0	12	3	7	0	15	0	7
None	0	0	0	32	46	23	0	30
TOTAL	100	100	100	100	100	100	100	100
INDUSTRY								
Agriculture	9	0	7	19	15	15	33	18
Agricultural & Related Services	9	12	10	0	0	15	0	3
Construction	9	25	13	3	0	15	0	5
Government	17	0	13	13	8	0	0	8
Manufacturing	26	0	19	3	8	8	0	5
Other Services	9	25	13	0	8	0	0	2
Trade	22	25	19	35	15	23	33	28
Other*	0	12	3	3	0	0	30	3
None	0	0	0	23	46	23	0	27
TOTAL	100	100	100	100	100	100	100	100

*Other includes Finance, Transportation and Communications.
Note: Totals may not add to 100 due to rounding.

TABLE 6

OCCUPATIONS OF FORMER VOCATIONAL AGRICULTURE STUDENTS

CURRENT OCCUPATIONS

AGRICULTURAL-ON FARM

General Farm Hand
Self-employed Farmer

AGRICULTURAL-OFF FARM

Groundskeeper-Public School
Self-employed (insecticide and fertilizers)

AGRICULTURAL RELATED

Warehouseman-Produce (Sk)
Delivery-Florist Shop (Ssk)
Fire Guard-Forest Service (Serv)
Butcher-Meat Packing (Sk)
Veterinary Assistant* (Serv)
Produce Man-Grocery* (Sales)

NOT AGRICULTURAL RELATED

Instructor, Mentally Retarded-Govt. (Prof)
Management Trainee-Ser.Sta. (Mgrl)
Stage Crew Mgr.-Theatre (Mgrl)
Counselor, Boys Home* (Prof)
Hotel Desk Clerk (Cler)
Tool Crib Attendant-Mfg.* (Cler)
Salesperson, Dept. Store (Sales)
Cook-Restaurant (Serv)
Janitor* Bank (Serv)
Janitor-Govt. (Serv)
Electronics Tester-Mfg. (Sk)
Machinist-Mfg. (Sk)
Roofer-Const. (Sk)
Track Boss-Logging (Sk)
Body and Fender (Sk)
Auto Parts Driver (Ssk)
Machine Operator (Ssk)
Plumber Apprentice-Const. (Ssk)
Plywood Maker-Mfg. (Ssk)
Swim Pool Const.-Apprent. (Ssk)

PREVIOUS OCCUPATIONS

AGRICULTURE-ON FARM

Harvest Work
Date Farm Laborer
Cotton and Cattle Farming
Cowboy
Farm Hand in Midwest
Beekeeping

AGRICULTURE-OFF FARM

Lawn Work

AGRICULTURAL RELATED

Florist-Delivery (Ssk)
Produce Packer (Unsk)

NOT AGRICULTURAL RELATED

Night Club Singer (Prof)
Mimeograph Operator (Cler)
Shipping Clerk-Mfg. (Cler)
Travel Clerk-Air Line (Cler)
Sales-Auto and Other (not specified) (Sales)
Busboy (Serv)
Custodian (Serv)
Kitchen Helper (Serv)
Carpenter Appr. (Ssk)
Construction Equip. Oper. (Ssk)
Delivery (Ssk)
Drapery Work (Ssk)
Metal Machine Operator (Ssk)
Sawmill Work (Ssk)
Service Station Attdnt. (Ssk)
Swim Pool Const. (Ssk)
Carry Out Boy (Unsk)
Grocery Stocker (Unsk)

* Indicates part time while in school

In reviewing Tables 4 and 5, please keep in mind that the data under previous employment comes from only 38 former students and represents total responses, not individuals. The two additional responses in the industrial employment results from two former students having jobs of a different nature but of the same skill level in different industries.

Table 7 is a compilation of all responses to all items of the questionnaire. The current employment data was compiled without complete conformance to the Dictionary of Occupational Titles or the Standard Industrial Classification Manual. Some of the occupations shown under the Agricultural Related Column are those for which agricultural training is helpful; such as butcher or veterinarian assistant. Lawn work has also been considered agricultural off farm activity.

All responses recorded in Table 7, with the exception of positive responses to previous occupation, are shown in accordance with the present activity of the former student. It is interesting to note that one respondent, now employed in a produce firm (Agricultural Related) states that he would change his high school course of study, and that only three of eight now enrolled in a non-related college or junior college course would change his high school curriculum. Three of four now employed full time in agricultural occupations have had some college. Only five of 15 (33%) now employed full time in non-related work have had any college, though six additional (making 73% in all) have had some education after leaving Phoenix Union High School. Only one of the 15 now employed in non-related occupations stated that he would change his high school curriculum. He had lost interest in the vocational agriculture course because he didn't have enough money to "buy into" agricultural projects and eventually dropped out of high school before graduation.

TABLE 7

RESPONSES OF FORMER VOCATIONAL AGRICULTURE STUDENTS TO ITEMS ON FOLLOW-UP QUESTIONNAIRE BY ACTIVITY IN WHICH CURRENTLY ENGAGED

	PRESENTLY EMPLOYED				IN SCHOOL					
	Agri on farm	Agri off farm	Agri Related	Not Related	Agri	Agri Related	Not Related	Military Serv	Other	Total
PRESENT OCCUPATION										
Full time	2	2	4	15		2	8	10	1	44
Part time						2	6			8
PREVIOUS OCCUPATION	10	1	2	25						38
None Reported	1		2	4		1	2	6		16
GRADUATION FROM HIGH SCHOOL?										
Yes	1	2	3	14		2	8	9	1	40
No	1		1	1				1		4
FURTHER EDUCATION										
College or University		1	2	1		1	1			6
Junior College			1	4		1	6	3		15
Vocational School							1			1
Correspondence School				1						1
Military Specialist				1				1		2
Other High School		1		2						3
Night School				2						2
Other	1							2		3
SELF EMPLOYED	1	1								2
WOULD CHANGE FROM VOC. AG. HIGH SCHOOL COURSE										
Yes			1	1			3			5
No	2	2	3	14		2	5	10	1	39

Another approach to the value of the vocational agriculture program is comparison of the characteristics and activities of those students in the program who lived out of the geographic service area with those who lived within the geographic service area of the Phoenix Union High School. Just over one-half (28) of the 55 former vocational agriculture students under study came from areas outside the Phoenix Union High School service area. (One, who attended a parochial high school for all work except agriculture but who lived in the Phoenix Union High School District is included in the 28.) It is not unreasonable to assume that these students came to Phoenix Union High School to take vocational training and, since they had at least four semesters of agriculture, it can also reasonably be assumed that vocational agriculture was the prime purpose for attending Phoenix Union High School. Of the 28 who came from out-of-area, 13 transferred to Phoenix Union High School after starting at another high school service areas were distributed as follows: Alhambra-6; Camelback-2; Carl Hayden-4; Central-4; North-4; South Mountain-5; West-2; Tempe-1; Buckeye-1; St. Mary's-2.

Comparison of achievement in the agriculture program shows that the out-of-area students were probably more highly motivated as 43% over-achieved in agriculture while none under-achieved compared to over-achievement of only 20% of the students from the Phoenix Union High School District and under-achievement by 10%. Unfortunately, IQ Stanines were not available for one-half of the out-of-area students and these percentages were based on only 14 of 28.

Over-achievement and under-achievement is defined for purpose of this study as falling above or below an empirically determined range of grade-point averages converted according to the Phoenix Union High School System grade point conversion scale.* It can best be described by Chart I which illustrates the achievement in vocational agriculture by Out-of-area and Within area students. The area within the heavy black line indicates expected achievement for the IQ Stanine.

Those in areas to the left of the heavy blcak line achieved a grade point average above that expected (over-achieved) and those to the right achieved below that expected (under-achieved). This concept of over and under-achievement, (admittedly open to criticism, but what concept of this complex and important educational enigma is not open to criticism?), will be used throughout this report so that all comparisons will be on a comparable basis.

Though no definite conclussion can be drawn concerning over and under-achievement among those students for which no IQ was available, the

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*Grade-point average conversion used throughout the report conformed and the Phoenix Union High School System's grade-point conversion scale shown on the bottom of the grade record sheet, except that no cognizance was taken of students in A classes for acedemically superior students and they were converted as "Regular Section". Slow sections were noted and slow section grade-point conversion was used for the semesters of slow learner classes. These grade-point conversions are as follows:

Regular Section		Slow Section	
Grade	Grade Points	Grade	Grade Points
1	5	1	4
2	4	2	3
3	3	3	2
4	2	4	1
F	0	F	0

The numerical grade-points for each semester in a subject were assigned according to grade and type of section and averaged to get converted grade-point average.

CHART I

ACHIEVEMENT IN VOCATIONAL AGRICULTURE BY OUT-OF-AREA STUDENTS (TOP) AND WITHIN AREA STUDENTS (BOTTOM)

OUT-OF-AREA STUDENTS
Grade Point Average

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Total
9											
8											
7			1		1						2
6		1			1						2
5			2		2	1					5
4				1		1					2
3											
2			1		1						2
1				1							1
Total		1	4	2	5	2					14

WITHIN AREA STUDENTS
Grade Point Average

IQ Sta-nine	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Total
9											
8											
7						2					2
6			1	4	1	2					8
5			1		1						2
4				2		2					4
3		1		1	2						4
2											
1											
Total		1	2	7	4	6					20

average grade point achievement in vocational agriculture is considerably greater for the out-of-area students.

	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Total
Out-of-area		1	3	6	1	3					14
Within area				3	2	2					7

Grade comparisons of out-of-area students with those from the Phoenix Union High School District in English and mathematics are not as conclusive. The proportion of out-of-area students over-achieving in English was higher (14% to none for within area students) and in mathematics was higher (21% to 4% for within area), but under-achievement was mixed. The proportion of out-of-area students who under-achieved was higher in English (57% to 40%) but was lower in mathematics (75% to 60%).

Further evidence of motivation for the study of vocational agriculture on the part of out-of-area students in a comparison of the deviations of agriculture grade point averages from composite grade point averages for each individual student in English and mathematics. The deviations for out-of-area students was significantly greater than those for within area students.*

Deviation	2.5 to 2.9	2.0 to 2.4	1.5 to 1.9	1.0 to 1.4	.5 to .9	0 to .4	-.1 -.5	- .6 to -1.0	Total
Out-of-area students	5	2	7	10	2	0	0	1	27*
Within area students	0	3	3	11	7	2	1	0	27

*One out-of-area student took only agriculture at Phoenix Union High School. English and mathematics grades not available.

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*The mean deviation of all students was 1.3. A Chi Square test of significance produced a value of 12.69 for two degrees of freedom. The probability of deviations as those of out-of-area students would occur only 1% of the time among within area students.

The deviation of agriculture grades from those in basic academic courses such as English and mathematics may be due to student interest or it could be that agriculture is an easy subject or that agriculture teachers are lenient in grading. Some light may be thrown on this subject by an examination of grading by two agriculture teachers on the staff during the period under study. A total of 24 students took courses under both Mr. Smith and Mr. Kovash. Grade point averages were prepared for the courses taken under each and deviations from average English and mathematics grades were compared. With 10 out-of-area students, deviations of agricultural grades given by Mr. Kovash were significantly higher (at the 5% level) than those given by Mr. Smith. The opposite was true for deviations of 14 within area students, with Mr. Smith's grades having significantly (5% level) higher deviations than those of Mr. Kovash. When deviations of all 24 students were combined, there was no significant difference between the grades given by the two teachers. The average agriculture grade earned by both out-of-area and within area students under Mr. Smith was 3.3. The average grade for out-of-area students was 3.8 and for within area students was 3.2 in Mr. Kovash's classes.

There were no failures in agriculture classwork by out-of-area students, but three failed in at least one project. Among within area students, two failed at least one semester of classwork and four failed at least one project. Eleven of the 28 out-of-area students had no failures in agriculture, English or mathematics, while only seven of the within area students had no failures in any of the three subjects. The out-of-area students took slightly more courses in agriculture with 54% completing eight or more semesters compared to 52% for within area students. The median number of courses completed by out-of-area students was nine and by within area students was eight.

One final comparison between the group who chose to attend Phoenix Union High School and those who lived in the area is the success in agriculture projects as measured in net profit. Table 8 shows the distribution of yearly average profit among within area students, out-of-area students, (including those who transferred), and transfer students.

TABLE 8

YEARLY AVERAGE PROFIT FROM APPROVED AGRICULTURE PROJECTS BY AREA OF RESIDENCE AND TRANSFER STATUS

DOLLARS	Within area	Out-of-area (includes transfers)	Total	(Transfers)
500 or more	3	1	4	1
400 to 499	1	1	2	1
300 to 399	1	3	4	1
200 to 299	1	6	7	3
150 to 199	2	2	4	1
100 to 149	2	3	5	2
50 to 99	1	4	5	1
0 to 49	9	3	12	1
-1 to -50	0	1	1	1
Total with Projects Reported	20	24	44	12
INA	7	4	11	1
TOTAL	27	28	55	13
MEDIAN	100	175	140	200
MEAN	196.65	188.38	192.14	214.67

Though one out-of-area student sustained a net loss and all within area students showed a net profit, the median average yearly net profit was $100.00 for within area students, $175.00 for all out-of-area students, and $200.00 for those students who had transferred to Phoenix Union High School after starting at some other high school in the area. This data is based on only 24 out-of-area students and 20 within area students as project records were not available before Calendar 1960. Over the six-year period from 1960 through 1965, the students earned a total of $11,194.07 in individual agricultural projects, $328.06 in cooperative farm projects, and $6,899.62 in approved agriculture and related work experience, making a total of $18,093.69. Since the students spent varying lengths of time in approved projects, all data for individuals was reduced to annual average profit for comparability.

It is thought by some that success in agriculture projects measured by profit will be followed by success in later life. Table 9, a comparison of present occupation against earnings in agriculture projects among the 44 former students responding to the survey reveals no discernible pattern, though three or four who earned more than the average yearly profit of all students studied ($192.00 per year) were employed full time in agriculture. Table 9 does illustrate that the profit measure did appear

TABLE 9

OCCUPATION OF FULL-TIME EMPLOYED AND OTHER ACTIVITY STATUS BY AVERAGE YEARLY AMOUNT EARNED IN AGRICULTURE PROJECTS AND BY AVERAGE AGRICULTURE GRADE POINT AVERAGE

OCCUPATION	Earned under $192	Earned over $192	Project INA	Average Agriculture Grade Point		
				Under $192	Over $192	INA
Agriculture	1	3		2.8	3.4	
Prof. and Mgr'l.	1	1	1	2.6	4.0	3.0
Clerical & Sales	1	1		2.7	2.4	3.0
Service	2		1	3.6		3.3
Skilled	5		1	3.2		3.8
Semiskilled	3	2		3.4	3.6	
TOTAL Full-time Employed	13	7	3	3.2	3.4	3.4
Student	6	3	1	3.6	3.7	2.8
Military Service	5	4	1	3.0	3.6	3.6
Other*	1			3.1		
TOTAL	25	14	5	3.3	3.5	3.3
AVERAGES						
Full-time employed	$ 72.48	$384.65		3.2	3.4	3.4
Students	28.37	488.77		3.6	3.7	2.8
In Military Service	106.43	420.93		3.0	3.6	3.6

*Not in labor force at present

to have some relationship to grades in agriculture; however, as those who made more than the average profit had a grade point average of 3.5 in all agricultural courses; those who made below the average annual profit had a grade point average of 3.3 and those who either had no project or records were not available on them averaged 3.3. The addition of this data for the 11 not responding to the survey makes this even more apparent, as all students averaging less than $192.00 per year averaged 3.5 and those on whom project data was not available had a combined grade point average 2.9.

Success in projects seems to depend to some extent at least on the student's financial resources. One student stated in the follow-up study that he could not afford to buy into projects and lost interest in agriculture. Inspection of the details of project data indicates that $1,000.00 or more was invested by some students in farm shares, cattle, or land rental. Students not having large sums of money to invest made small profit on small investments in rabbits, pigeons, or fractions of an acre of land. These students may have been proportionately more successful than the "big operators", but data on the amount invested for the profit obtained was not available and this could not be followed up.

In summary, the vocational agriculture program is very effective for the small group of students who take two years or more in agriculture. It apparently fosters ambition to get further education and to work, once school is completed. Several of the former students who were in military service or working in an occupation with which they were dissatisfied had strong intentions to enter college at the earliest possible time and several expressed the hope of owning a farm or ranch at some time in the future even though they might earn their living in some other line of work. The choice of agriculture in high school was reinforced through their educational experience and the will to reach ambitious but attainable goals seems to be deep-seated.

The vocational agriculture program has little impact on a large number of students and much expensive training is wasted on students who only "sample" agriculture for one reason or another.

Recommendations for improvement and economy in the course are as follows:

1. Institute more productive selection techniques for enrollment in vocational agriculture.

2. Review the requirements of Federal legislation covering funding for vocational agriculture with counselors in the entire school system.

3. Give more publicity to earnings of agriculture students in connection with their projects. Practically everyone knows about the Junior Achievement program, and a large number are aware of the cooperative school work programs in office work, distributive education, and industrial trades. It is reasonable to believe that the general public has no idea of the earnings in agriculture projects and approved work experience. More publicity would help the public to understand the value of the program and case history publicity on approved work should open up more opportunities for cooperative school work projects. This would also provide greater opportunity for those who could not afford to buy animals or lease land to engage in approved work experience projects.

SECTION II

JOB OPPORTUNITIES IN AGRICULTURE AND AGRICULTURE RELATED OCCUPATIONS

The cooperative nature of this report is typified by the ecomomic survey of employment opportunities conducted by the Arizona State Employment Service. This survey was undertaken to identify the emerging requirements in occupations for which vocational agriculture or training in agricultural -related occupations may prepare high school terminal students.

These data, together with information gleaned from the reports of the United States Bureau of Census, personal interviews conducted with the Farm Bureau, cattlemen, Salt River Water Users Association, major growers, agricultural distributors, farm implement, chemicals and supply manufacturers and distributors, and employers' association, such as, the Associated Landscape Contractors of American and Professional Associations including the America . Landscape Architects Association, etc, were combined with information available from sustantiating research for Manpower and Development Training Act training programs, and the considerable research conducted by the University of Arizona, College of Agriculture and its' affiliated agencies. Information was gathered and analyzed on the occupations for which demands currently exist; on the occupations for which demands seem to be increasing at the greatest rate; on the skill and training content of these occupations; on the suggested curricula that might be offered at a high school level program for these occupations; as well as on a number of other facets and aspects related to such programs.

The following pages present the report of the Employment Service in its' entirety.

OCCUPATIONAL-INDUSTRY STUDY
AGRICULTURAL AND AGRICULTURAL SERVICES
MAY-JUNE 1966

This study of occupations in the agricultural and agricultural services industries is one phase of a large, long-range project designed to determine the occupational make-up of Arizona's employed work force. Data related to the occupations of the employed is regularly available only once every ten years when the federal censuses are conducted. In a rapidly changing economy such as Arizona has experienced in recent years, up-to-date occupational information is essential for realistic planning for the efficient development and utilizations of the State's manpower (and womanpower).

Studies such as this one provide the only source of quantitative occupational information during intra-census periods. Consequently the data obtained from these studies have been of great assistance in providing answers to questions submitted to the Arizona State Employment Service by training institutions, industrial development groups, and others interested in manpower development.

As a case in point: The Agency was asked to conduct this study of agricultural employment during May and June of 1966, a period of low employment for the industries surveyed. More information could have been obtained had the project been delayed until a season of high or average employment occurred. However, the need for information on which to base curriculum planning for the 1966 Fall semester was so pressing that it was considered expedient to not wait until more inclusive information could be obtained.

STUDY SCOPE AND METHODOLOGY

This phase of the Occupational-Industry Study was designed to include those establishments in Maricopa County with permanent or full-time employment and which are classified by the Standard Industrial Classification (SIC) Manual as Farming (major groups 01 and 02), Agricultural Services, Hunting, and Trapping (major group 07), Forestry (major group 08), and Fisheries (major group 09). The records of the Arizona State Employment Service, Farm Division, were used to obtain the listings from which the Study sample was selected. These records are reliably estimated to include 90 to 95 percent of all establishments within the Study scope. The listings revealed that Maricopa County establishments within the scope of the Study are limited to major groups 01 ond 07 (commercial farms and agricultural services).

This universe of farms and agricultural service firms was stratified by four-digit SIC class and by six categories of employment size. Data relating to employment size was also obtained from Farm Division records. Samples were selected from each employment size category within each four-digit class. From the 15 four-digit classes represented in the universe, 48 samples were thus obtained. Since most of the employing units in the universe had less than 50 employees, most of the SIC classes included four or less size categories and only one included all six. Sample sizes varied with size and number of employing units within each universe segment. If a segment contained only one or two employing units, all were included in the sample. If a segment contained 100 or more very small employing units only 4% or 5% were included in the sample.*

The Study data were collected during the latter part of May and the first part of June 1966 by interviews with employers at the locations of the sample establishments. The data requested included for each "nonseasonal" occupation employed, the current employment, current female employment, expected employment 12 months hence, the number of persons hired during the past 12 months to replace workers who left the area or the occupation for which they had been hired, the number of persons receiving on-the-job training, and the number of job vacancies.** The persons interviewed were also asked to express opinions regarding vocational training for agricultural employment and to suggest areas of training which might be included among vocational agriculture courses.

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* The term "employing unit" is used because both farms and agricultural service firms are frequently operated at more than one location by a single employer or company which does not maintain separate employment records for each installation.

** Based on past Employment Service experience with farmers, the current employment data obtained may be accepted as accurate (within the limitations imposed by varying definitions of "permanent." See footnote on page 26) However, many farmers are reluctant to commit themselves as to future employment and state that they have no control over factors which exert strong influences on their employment needs. When employment 12 months hence was not obtainable, current employment was substituted. This resulted in a very small over all difference between current and "12 months hence" data. Replacements must be interpreted as "turnover" because farmers generally have no knowledge of the plans of employees who leave. On-the-job training on farms is usually limited to close supervision while an employee is learning the tasks of a job. Job vacancies represent those openings for which active recruitment was being conducted at the time of the survey.

As sample data were received, some adjustments were made in the basic universe data as originally obtained from Farm Division records. Establishments found to be no longer in business or operating without any nonseasonal employees were removed. In some cases information obtained during the interview resulted in an employing unit being moved from one SIC classification to another.

From these revised data, inflation factors were developed for each of the 48 samples. These factors reflect the relationship between the total employment for each sample and the total employment for the universe segment it represented, based on the original data obtained from Farm Division records. The following report provides the estimates of employment by occupation which resulted when these factors were applied to the occupational data obtained for each of the 48 samples.

FINDINGS

The Study results as presented in Table 10 show that there are approximately 5,100 "permanent" or "regular hired" workers employed by farms, ranches*, and agricultural service establishments in Maricopa County**. Well over half (55%) of these workers are employed by employing units which vary in employment size between 4 and 19 employees. Units of this size comprised almost exactly half (50.1%) of the 687 units within the scope of the Study. One-third (33.2%) of the workers are employed by general farms which are engaged in raising various crops (but are not primarily cotton or vegetable farms). Close to one-fifth (18.5%) are employed by vegetable farms and about one-eighth (12.2%) work for cotton farms. Other types of farms in the area together with their proportions of the employees included in this Study are: Livestock or primarily livestock farms (9.3%), dairy farms (8.8%) fruit farms (3.7%), rose plant farms and general nurseries(7.1%) and general farms raising both crops and livestock (2.0%). Agricultural

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* "Dude" ranches are not included in the scope of this Study as they are classed as "service establishments" by the Standard Industrial Classification Manual.

** The Terms "permanent," "full time," "regular hired," and "non-seasonal" are used by farmers to refer to employees who comprise their basic complement of workers. These terms are rather loosely defined and the criteria used for identifying such workers frequently varies between employers and with the purpose for which the information is desired. The interviewers who collected data for this Study accepted each employers's statement as to the number of such workers without attempting to establish any uniform definition of "permanent."

TABLE 10
AGRICULTURAL EMPLOYMENT IN MARICOPA COUNTY BY TYPE OF ESTABLISHMENT

Occupations	Cotton Farms	Fruit & Tree Nut Farms	Vegetable Farms	Dairy & Poultry Farms	Livestock & Primarily Livestock	Primarily Crop & Cash Grain	Crop & Livestock Farms	Horticultural Specialists	TOTAL FARM & RANCH	Cotton Ginning & Processing	Other Agricultural Services	TOTAL AGRICULTURAL SERVICES	TOTAL
PROFESSIONAL & MANAGERIAL			15		4	7	1	3	30	43	22	65	95
Accountants			1						1	7		7	8
Airplane Pilots											5	5	5
Horse Trainers					2				2				2
Purch. Agents & Buyers					2				2		2	2	4
Managers & Officials			14			7	1	3	25	36	15	51	76
CLERICAL	13	7	49	2	31	31	5	7	145	29	19	48	193
Bookkeepers	10	6	33	2	22	22	5	1	101	7	5	12	113
Secretaries					2	3			5		3	3	8
Other Clerical	3	1	16		7	6		6	39	22	11	33	72
SALES			4					7	11				11
SERVICE OCCUPATIONS					4	2	1		7				7
"PRODUCTION" WORKERS	604	179	800	456	342	1527	86	341	4335		67	67	4402
Stock & Crop Managers	3		29	24	3	8		8	75				75
Foremen	90	55	108	33	23	152	5	25	491		19	19	510
Farm Hand Gen. I	225	13	103	16	56	473	9		895		1	1	896
Farm Hand (Spec.) I		79	6	183	142	73	9	8	500				500
Irrigators	97	17	193	20	19	356	11	3	716		6	6	722
Tractor Operator I	96	5	154	12	14	241	12	11	545		18	18	563
Tractor Operator II (Cat)			9			46			55		7	7	62
Farm Hand Gen. II	90	10	95	9	85	160	38	285	772		3	3	775
Farm Hand (Spec.) II	3		103	159		18	2	1	286		13	13	299
SKILLED & SEMISKILLED	7	2	74	6	85	67	9	7	257	102	16	118	375
Ginners										95		95	95
Millers & Batch Mixers					45				45				45
Mechanics & Maint. Men	5	2	29	4	18	44	4	4	110	7	16	23	133
Truck Drivers			45	2	22		5	3	77				77
Other Skilled & Semiskil.	2					23			25				25
LABORERS					9	9			18		2	2	20
TOTALS	624	188	942	464	475	1643	102	365	4803	174	126	300	5103

service firms employ 5.9% of the total.*** Table 10 shows the distribution of current employment by type of employing unit.

About 4,400 of 86% of the total of 5,100 workers included in the Study scope are employees who engage in activities directly related to the production of crops, livestock, or primary dairy products. In addition to field or herd workers, this group includes irrigators, tractor drivers and those managers, and foremen. About 100 or 2% of the total are professional or managerial people. Most of these (76) are business managers or office managers but accountants, purchasing agents, airplane pilots, and horse trainers are also included. More than two-thirds of this group are employed by agricultural service firms. Some 375 or about 7% of all employees included in the survey are mechanics, machine operators and other skilled or semi-skilled workers who engage in activities requiring skills not exclusively related to crop or livestock tending. They include truck drivers, and workers skilled in construction trades as well as farm equipment repairmen, gristmill operators, and ginners.

Clerical workers comprise about 200 or 4% of the total. More than half of these workers are bookkeeping machine operators. About four-tenths of 1% are laborers engaged in work requiring minimal training. Sales people total 11 or two-tenths of 1%. A little more than one-tenth of 1% are classed as janitors, charwomen, or watchmen.

***Cotton gins accounted for 175 of the 302 employees of agricultural service firms. However, the Study was conducted during the "off" season and it is likely that more employees would be reported as "full time" if the Study were reconducted during the ginning season.

Those occupations which occur in greatest number are farm hand, irrigator, and tractor operator. Together these occupations account for more than 3,800 or about 75% of all employment included in the Study. They also account for close to 93% of the replacements (turnover) and nearly 83% of the job vacancies.

Data for four types of farm hands are presented in Table 11. The designation Farm Hand I is used to refer to workers who are sufficiently experienced to be able to function with only general supervision. There are nearly 1,400 of these workers. Almost 900 General Farm Hands capable of handling a wide variety of tasks associated with the raising of various crops or types of livestock. Turnover (replacements) for Farm Hands General I totaled 375 or (39.8%) of current employment in this occupation.

The remaining Farm Hands I are classified as specialty farm hands and are primarily skilled in work related to a particular type of farm. Their specific titles may be Farm Hand Dairy, Farm Hand Citrus, Farm Hand Fruit, Farm Hand Poultry, Farm Hand Livestock, Range Hand, Cowpuncher, Sheepherder, Nurseryman, Stableman, or Gardener. Table 10 shows the distribution of current employment by type of employing unit. The distribution of specialty farm hands by specific title may be inferred from the type of farm by which they are employed. Turnover (replacements) for Farm Hands (spec.) I totaled 173 or 34.6% of current employment in the occupation.

TABLE 11

AGRICULTURAL AND AGRICULTURAL SERVICE OCCUPATIONS IN MARICOPA COUNTY

Occupations	Current Employment	Female Employment	Employment 12 mos. Hence	Replacements	On-The-Job Training	Vacancies
PROFESSIONAL & MANAGERIAL	95	8	76	0	0	0
Accountants	8	0	1			
Airplane Pilots	5		5	0	0	0
Horse Trainers	2	0	2	0	0	0
Purch. Agents & Officials	4	0	4	0	0	0
Managers & Officials	76	8	76	0	0	0
CLERICAL						
Bookkeepers	113	54	110	8	0	0
Secretaries	8	7	8	2	0	0
Other Clerical	72	32	69	8	0	0
SALES	11	3	13	3	0	0
SERVICE OCCUPATIONS	7	3	5	3	0	0
"PRODUCTION" WORKERS	4402	77	4425	1495	13	35
Stock & Crop Managers	75	0	77	5	0	2
Foremen	510	3	514	22	0	0
Farm Hand Gen. I	896	0	895	357	0	14
Farm Hand (Spec.) I	500	6	514	173	0	2
Irrigators	722	0	734	426	5	8
Tractor Operator I	563	0	568	240	3	2
Tractor Operator II (Cat)	62	0	62	12	0	0
Farm Hand Gen. II	775	55	757	167	0	7
Farm Hand (Spec.) II	299	13	304	93	5	0
SKILLED & SEMISKILLED	375	0	324	65	0	5
Ginners	95	0	95	8	0	0
Millers & Batch Mixers	45	0	37	17	0	0
Mechanics & Maint. Men	133	0	122	9	0	1
Truck Drivers	77	0	61	20	0	1
Other Skilled & Semiskil.	25	0	29	11	0	3
LABORERS	20	0	20	3	0	0
TOTALS	5103	184	5082	1587	13	40

The designation Farm Hand II is used to identify those workers who perform simple tasks under close supervision. There are about 1,079 of such workers in the area studied. Turnover (replacements) among General Farm Hands II totaled 167 or 21.5% of the current employment in the occupation (775). Turnover among Farm Hands (spec.) II totaled 93 or 31.1% of current employment (299).

The study revealed 722 workers classed as Irrigators. Irrigating is an activity sometimes performed by workers classed as Farm Hand I. The title of Irrigator is used when this work is deemed to be a worker's primary activity. Among workers classed as Irrigators the turnover (replacements) totaled 426 or 59% of current employment in the occupation.

Part of the work of a Farm Hand I may also include tractor operation. Workers who drive tractors as their primary tasks are given the title Tractor Operator I or Tractor Operator II, the latter title being used to refer to operators of "caterpillar" or crawler-type equipment. There are 625 workers in the Study area who are classed in this category, 62 of whom are Tractor Operators II. The turnover (replacements) of Tractor Operators (both I and II) totaled 252 or 40% of current employment.

About one-third (35.5%) of the 375 workers classed as skilled or semiskilled in Table II are mechanics, repairmen, or maintenance men. Farm mechanics and farm equipment mechanics together totaled 97.

These two titles are almost interchangeable. The Farm Mechanic may also do repair work on farm structures in addition to repair work on farm structures in addition to repair and maintenance of machinery. Turnover for all skilled and semiskilled workers totaled 65 or 17.3% of current employment in these occupations. The ratio of turnover to current employment was lowest for the mechanics, repairmen, and maintenance men (6.7%).

COMMENTS REGARDING VOCATIONAL EDUCATION FOR AGRICULTURAL EMPLOYMENT BY MARICOPA COUNTY EMPLOYERS

The responses obtained when agricultural employers were asked to comment on vocational education reflected considerable interest in this subject. Only 35 of the 199 persons contacted declined to comment, and 16 of these were engaged in providing agricultural services rather than farm operation. Among the farmers, 145 or 88% had some comment to make.

The types of training most often referred to concerned farm machinery and equipment operation, maintenance, and repair. A need for training in equipment operation and maintenance was expressed by 54 persons. Training in mechanics, welding, and other repair skills was a subject of 43 comments. Some respondents indicated a need for training in both of these areas and are included in both groups.

Other comments were related to agricultural science and technology (Animal Husbandry, Horticulture, and use of soils, water, and agricultural chemicals).

A sizeable group of respondents (39 or 25.8% of all persons offering comments) felt that on-the-job training was essential to adequate preparation for farm work. Some of these persons felt that this was the only type of training needed, while others held that classroom work should be supplemented by on-the-farm experience.

TABLE 12
EMPLOYER COMMENTS CONCERNING VOCATIONAL TRAINING FOR AGRICULTURAL OCCUPATIONS

Comment Categories	Farm or Ranch Operators	Agricultural Service Operators
No Comment	19	16
Farm Machinery Operation & Maintenance	52	2
Farm Machinery Mechanics (including repair and welding)	39	4
On-Job Training required for any farm job	34	5
Horticulture: soils, fertilizers, insecticides, plant growth and agrochemicals	23	1
General Farm Operation & Management	16	0
General Agriculture: growing crops and raising livestock	13	3
Animal Husbandry: raising livestock, poultry, breeding horses	12	0
Irrigating	9	0
Bookkeeping & other farm record keeping	8	2
Recommended no vocational training for Agriculture	4	0
Gardening & Landscaping	3	0
Automated Milking	3	0
Cotton Ginning	0	3
Miscellaneous: English, sense of responsibility, farm law, honesty	7	2
Total Comments	242	38
Total Employers Contacted	164	35
Estimated Total Employers in Study Scope*	657	71

*Agricultural and agricultural service establishments which Arizona State Employment Service records indicate are likely to have "regular" or "permanent" (nonseasonal) employees in Maricopa County.

Four respondents felt that vocational agriculture should not be taught at all because it would be a disservice to encourage young people to enter a field in which opportunities are declining.

Table 12 shows the distribution of comments by category and source, together with estimates of the total number of establishments within the Study scope and the number of employers contacted.

It should be restated that the report of the Employment Service reproduced in the preceding pages covers only production agriculture (commercial farms) and Agricultural Services. There are, of course, job opportunities related to vocational agriculture and horticulture in other industries in Maricopa County. Within the manufacturing industries, firms engaged in meat products manufacturing, primarily meat and poultry packing, employ over 750 persons in the county. Opportunities in this industry tend to expand slightly; however the movement of pen-feeding operation out of the urban area may call for a subsequent movement of the packing plants. The Dairy Products industry employs over 1000 persons in the county, including a large number of route men and truck drivers. There are, however, many production manufacturing jobs in this industry in which an employee could benefit from prior vocational agricultural education. Other job opportunities in manufacturing might be found in the Grain Mill, Products firms (employment of about 200) and in the Miscellaneous Food Preparations and Kindred Products firms (employment of about 1000). This latter group includes the Cottonseed Oil Mills which provide the majority of the opportunities in this industry in Maricopa County.

Non-manufacturing opportunities would seem to be concentrated in the Wholesale and Retail Trade industries. This would include wholesale distribution of Farm Machinery and Equipment and Agricultural Chemicals, concentrated in a few smaller firms (employment of less than 50 in each firm). Retail Trade opportunities are concentrated in Farm and Garden Supply stores (which employ about 500 persons in total in the county) and in Florists shops (which generally employ fewer than

20 persons in each establishment). A few opportunities might be found in Agricultural Credit and Agricultural Insurance establishments.

In the case of the agricultural-related occupations, job requirements typically include preparation beyond that offered in vocational agriculture programs. Most commonly, this would be in the general field of sales (distributive) education and/or business (office) education. This suggests that a merging of programs at the high school level might be investigated.

Results of the study conducted by the Arizona State Employment Service indicate that opportunities in on-farm and agricultural services industries are declining rather than increasing, as a whole. Replacement figures were low in all occupations except production occupations, many of which are learned on the job or take a comparatively short time to learn, such as Irrigator.

Operation of tractors did have fairly high replacement figures, but indicated very little expansion in the future. Many employees stated that education and on-the-job training were needed for farm equipment mechanics and repairmen, but replacement figures were low, total employment was only 133 and the outlook was for a loss of ten positions over the next 12 months--so the figures do not bear out the stated need.

Implications of this study are that the traditional vocational agriculture program for farm operation or on-farm agricultural work is not needed in Maricopa County.

Unfortunately agricultural related business; such as florist, farm and garden stores, grain, hay and feed stores, agricultural real estate and finance firms, farm equipment dealers and agro-chemical industries were not covered by the survey and these are the types of business which expect to grow in many areas where agricultural-related employment opportunities have been studied.

It is recommended that further effort be made to discover the employment potential in these related businesses in order to tailor the vocational agriculture program more closely to the needs of the community. If employers are contacted or recontacted for this information, they should also be sounded out for their willingness to provide related school-work experience to supplement the present agricultural projects which are a part of the present program.

More data concerning opportunities in agricultural related businesses might well solve the dilemma of "where to offer vocational agriculture". An education program tailored to meet the needs of florists, implement dealers, farm and garden stores, etc., would be using the businesses for work experience and obviate the necessity for expensive agricultural laboratories. These types of courses could be offered in several schools.

One physical location would still be required for farm machinery operation and repair before putting students into related work experience but most other laboratory practice could be accomplished in related work situations.

The program envisioned would be much like the present distributive education program and other school work-cooperative programs in clerical and industrial occupations. This might change the content of horticulture courses to floricultural chemistry and salesmanship courses for farm equipment or garden supplies.

A survey of these types of businesses might well be done under the auspices of the vocational agriculture department so that cooperative-work experience situations could be developed at the same time. With certain knowledge of employer needs and work-school experience available, curriculum content could be confidently tailored for employment opportunity.

SECTION III

IDENTIFICATION OF PERSONAL AND FAMILY CHARACTERISTICS

The personal and family characteristics of male students in all high schools of the Phoenix Union High School System were collected and analyzed for comparison with those of the former vocational agriculture boys in an attempt to identify the schools with similar characteristics as one factor in selection of the school best suited to offer vocational agriculture. A five percent sample of all boys currently in school was chosen randomly and the following characteristics were recorded:

1. Date of entry
2. Date of birth
3. Last school attended
4. State of birth
5. Intelligence score
6. Street address
7. Grades in English
8. Grades in mathematics
9. Relationship of student to male parent
10. Occupation and employer of male parent
11. Relationship of student to female parent
12. Occupation and employer of female parent
13. Number of children in family
14. Age rank of student among children in family
15. Age spread of children in family
16. Presence or absence of telephone in home
17. Number of address changes since starting high school
18. Extra curricular activities of student

The 5% sample was taken from attendance records, grade records, or student index. The sample size for each school was as follows:

Alhambra	76	Central	61	North	54
Camelback	68	East	40	Phoenix Union	99
Carl Hayden	54	Maryvale	80	South Mountain	56
West	67				

Access to all records was made available in nine high schools. As was anticipated, many items of information were not recorded. For example, South Mountain High School does not give I.Q. tests until the sophomore year and I.Q.'s on only 27 of the 56 in the sample were available. Due to the priority of another experimental project, complete records were not available at West High School on all students and family information was available on only 25 of 67 in the sample at this school. Only a few records showed education attained by parents and this would not be included. On the whole, however, most of the desired information was obtained directly from records or from couselors who assisted with the work.

In only a few instances were the characteristics distributed in even assemblance of the classic normal distribution in individual schools. Data for the entire system did approach normal distribution, though all distributions were somewhat skewed and grade-point averages in English and mathematics were bimodal as well as skewed. Charts II, III, IV and V graphically illustrate these deviations from normal.

A total of 36 items were developed for comparison of personal and family characteristics with those of the former vocational agriculture students. Table 13 is a summary of those characteristics. Detailed data for the various schools is included in the supplemental tables

TABLE 13

SUMMARY OF PERSONAL, SOCIAL, AND ECONOMIC CHARACTERISTICS AMONG BOYS IN PHOENIX UNION HIGH SCHOOL SYSTEM BY SCHOOLS AND AMONG FORMER VOCATIONAL AGRICULTURE STUDENTS

Characteristics	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	Total for System	Former Voc. Agri. Students
1. Median IQ Stanine	5.5	6.6	5.2	6.0	5.8	6.3	6.4	4.6	5.6	6.6	6.0	5.6
2. Median English Grade Point Average	2.3	3.2	2.4	3.1	3.0	2.9	2.5	2.0	2.4	3.1	2.7	2.2
3. Median Math Grade Point Average	2.3	2.9	2.6	2.7	2.1	3.0	2.3	2.2	2.7	3.1	2.7	1.9
ACHIEVEMENT-ENGLISH												
4. Overachieved	1%	11%	11%	6%	23%	4%	2%	9%	15%	10%	8%	6%
5. Underachieved	47%	20%	48%	48%	30%	39%	53%	49%	37%	34%	41%	47%
6. Expected Achievement	52%	69%	41%	46%	47%	57%	45%	42%	48%	56%	51%	47%
ACHIEVEMENT-MATHEMATICS												
7. Overachieved	6%	9%	12%	6%	5%	8%	6%	16%	15%	10%	9%	15%
8. Underachieved	28%	36%	30%	63%	55%	29%	61%	45%	30%	27%	40%	53%
9. Expected Achievement	66%	55%	58%	31%	40%	63%	33%	39%	55%	63%	51%	32%
10. Last School Arizona Elementary	80%	87%	84%	85%	87%	76%	77%	79%	85%	82%	82%	67%
11. Last School in Another State	12%	12%	6%	3%	0	16%	10%	8%	6%	12%	9%	5%
12. Born in Arizona	27%	38%	58%	56%	45%	18%	47%	55%	55%	32%	42%	49%
13. Live with Both Parents	77%	78%	76%	86%	90%	76%	61%	53%	75%	69%	66%	66%
14. Median # of children in Family	2.7	2.4	2.9	2.6	2.8	3.2	3.2	4.3	3.6	2.2	3.1	2.7
15. Students Who are Oldest Child	47%	34%	41%	27%	47%	49%	42%	28%	41%	24%	39%	42%
16. Families on Welfare	0	0	4%	0	0	0	0	7%	2%	0	1%	2%
17. Both Parents Work	38%	27%	26%	24%	34%	46%	33%	18%	27%	35%	32%	38%
18. Mothers Work	42%	37%	30%	28%	40%	50%	58%	36%	31%	53%	42%	48%
19. Families Supported by Mother	6%	10%	4%	4%	6%	4%	25%	18%	4%	18%	10%	10%
20. Mothers in White Collar Jobs*	57%	80%	65%	78%	82%	63%	65%	12%	46%	84%	60%	43%

*White collar jobs include P.T.& K., managerial, clerical and sales. (see note on next page)

TABLE 13 (cont.)

Characteristics	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	Total for System	Former Voc. Agri. Students
21. Mothers in Service Occupations	30%	15%	20%	8%	9%	17%	35%	59%	33%	7%	26%	43%
22. Mothers in Clerical Occupations	35%	15%	47%	55%	55%	40%	20%	4%	13%	45%	30%	14%
23. Mothers in P.T.& K** Occupations	11%	45%	0	15%	18%	11%	45%	4%	20%	13%	18%	10%
24. Mothers in Service Industry	22%	9%	60%	56%	20%	28%	37%	64%	25%	19%	33%	24%
25. Mothers in Manufacturing	13%	26%	10%	0	20%	19%	10%	20%	19%	19%	17%	19%
26. Mothers in Government	22%	36%	0	0	10%	21%	25%	20%	18%	26%	18%	25%
27. Mothers in Trade Industry	30%	18%	20%	33%	20%	25%	5%	8%	38%	31%	21%	10%
28. Fathers in White Collar Jobs	40%	80%	31%	82%	46%	44%	66%	14%	18%	71%	48%	15%
29. Fathers in Skilled Jobs	50%	18%	40%	10%	32%	42%	26%	34%	43%	18%	32%	57%
30. Fathers in Agricultural Occupations	2%	0	0	0	9%	2%	0	10%	6%	0	3%	14%
31. Fathers in Manufacturing	35%	30%	26%	11%	26%	24%	19%	8%	26%	32%	24%	28%
32. Fathers in Government	13%	11%	16%	14%	21%	22%	20%	22%	14%	11%	17%	31%
33. Fathers in Agricultural Industry	0	0	0	0	4%	3%	0	8%	7%	0	2%	16%
34. Fathers in Construction	7%	14%	21%	5%	17%	9%	22%	12%	19%	11%	13%	16%
35. Fathers in Service Industry	11%	16%	5%	24%	4%	11%	14%	21%	5%	21%	13%	9%
36. Fathers in Trade	19%	16%	19%	19%	13%	22%	14%	16%	12%	14%	17%	9%

**P.T.& K.: Professional, Technical and Kindred Occupations

Note: All data based on statistical sample of student records. Percentages in lines 19 through 36 are based on numbers employed.

CHART II

PERCENTAGE DISTRIBUTION OF I.Q. SCORES AMONG BOYS PHOENIX UNION HIGH SCHOOL SYSTEM MARCH, 1966

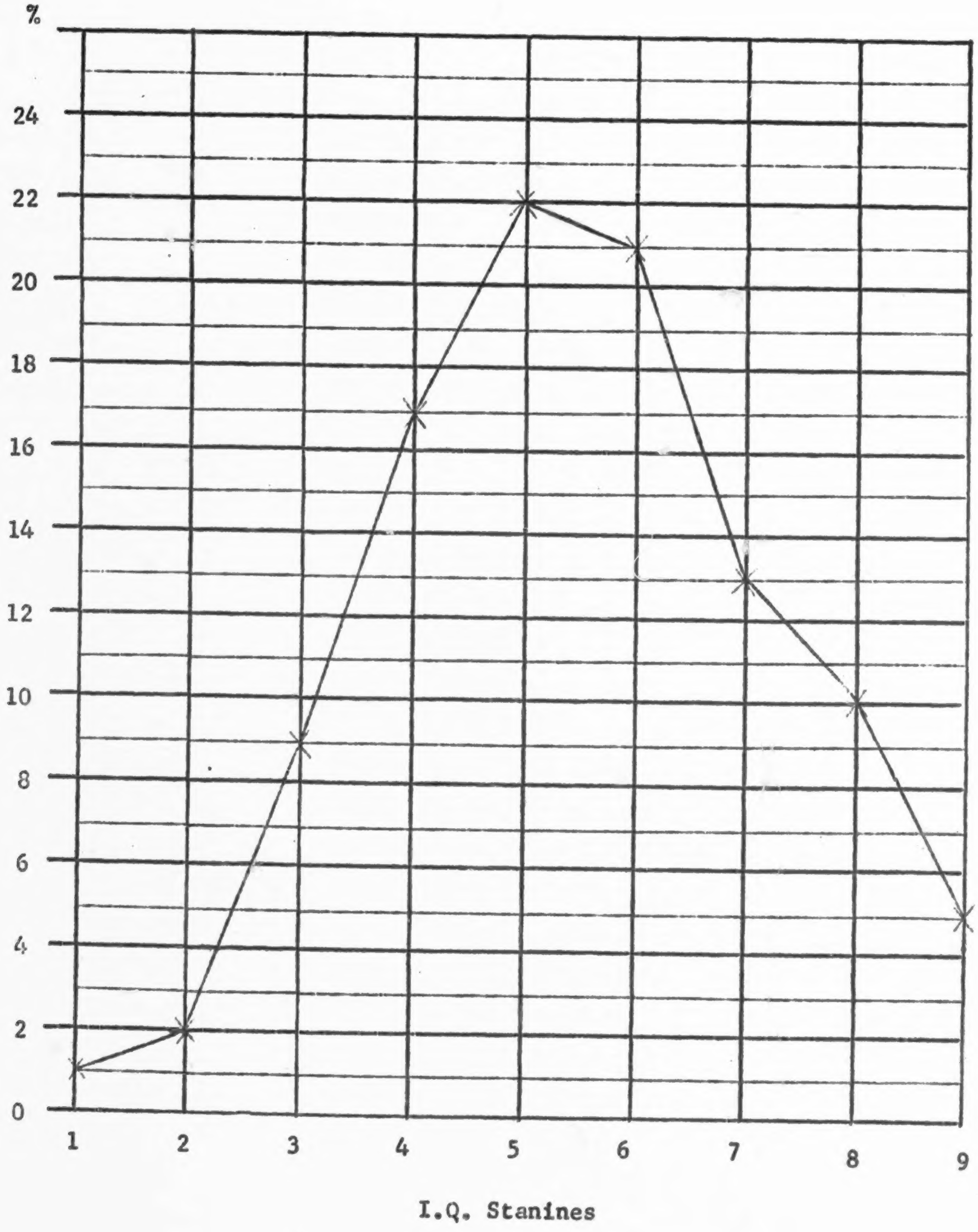
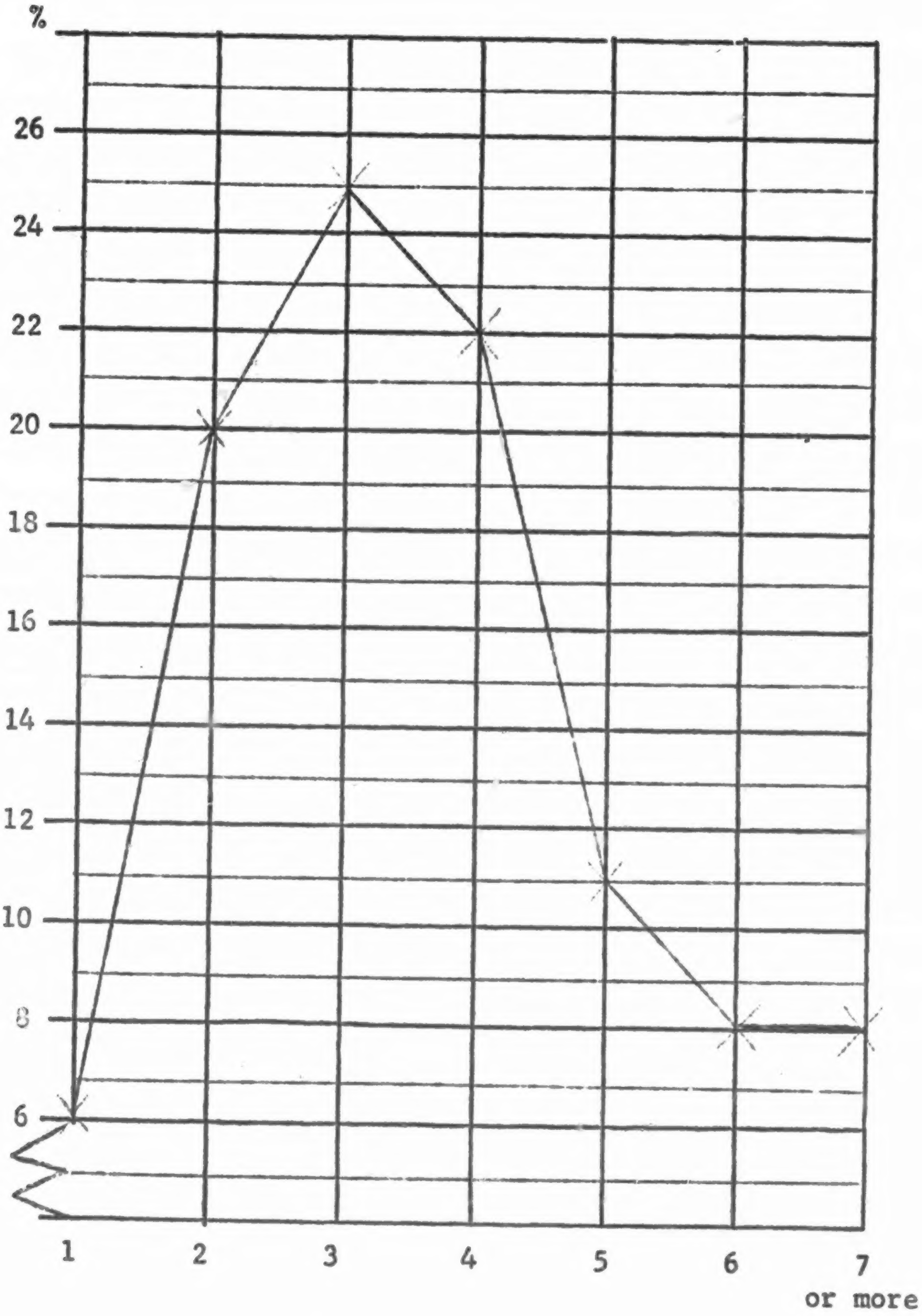


CHART III

NUMBER OF CHILDREN IN FAMILY PERCENTAGE DISTRIBUTION



Number of Children

CHART IV

ENGLISH
PERCENTAGE DISTRIBUTION OF BOYS' GRADES

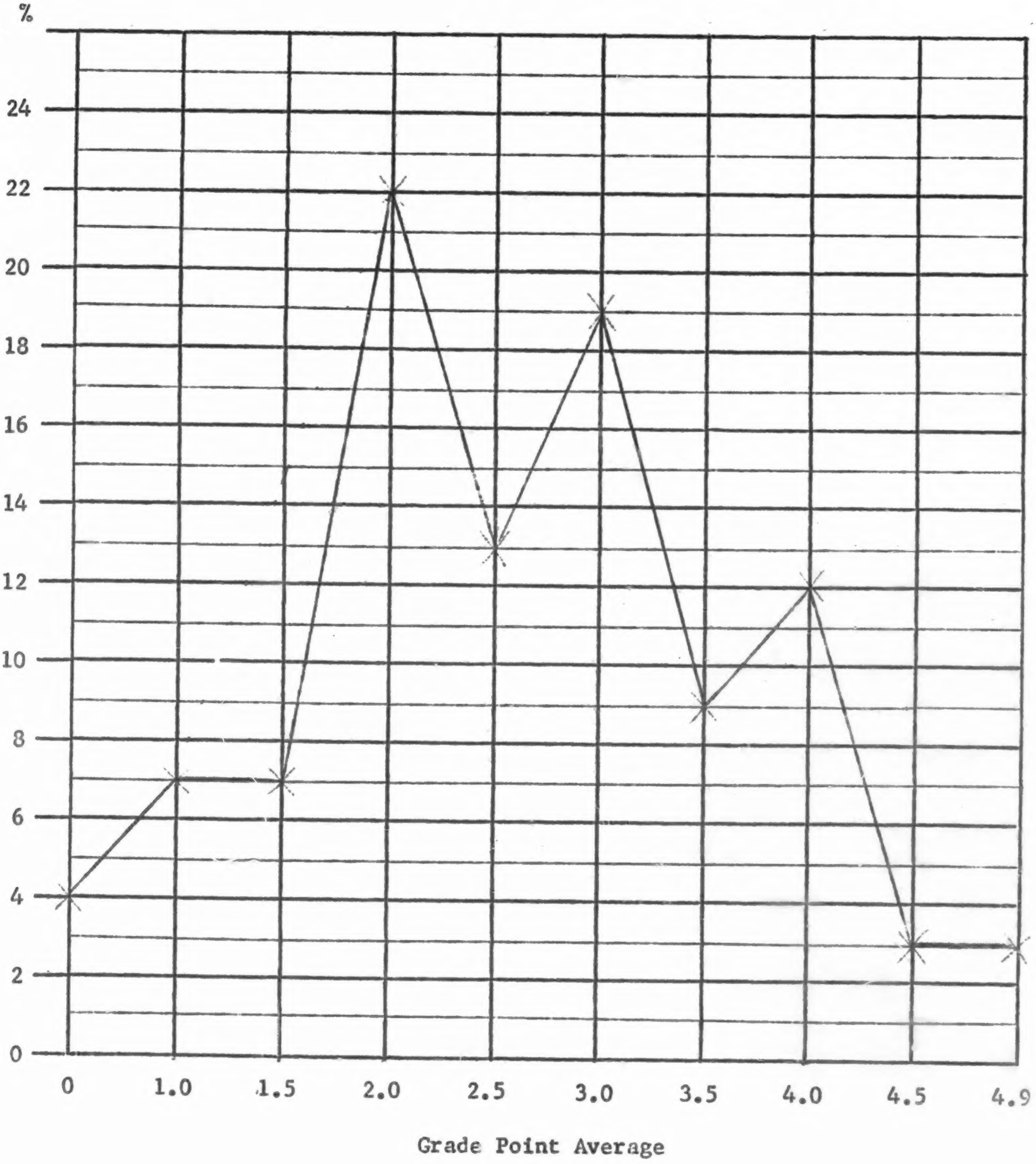
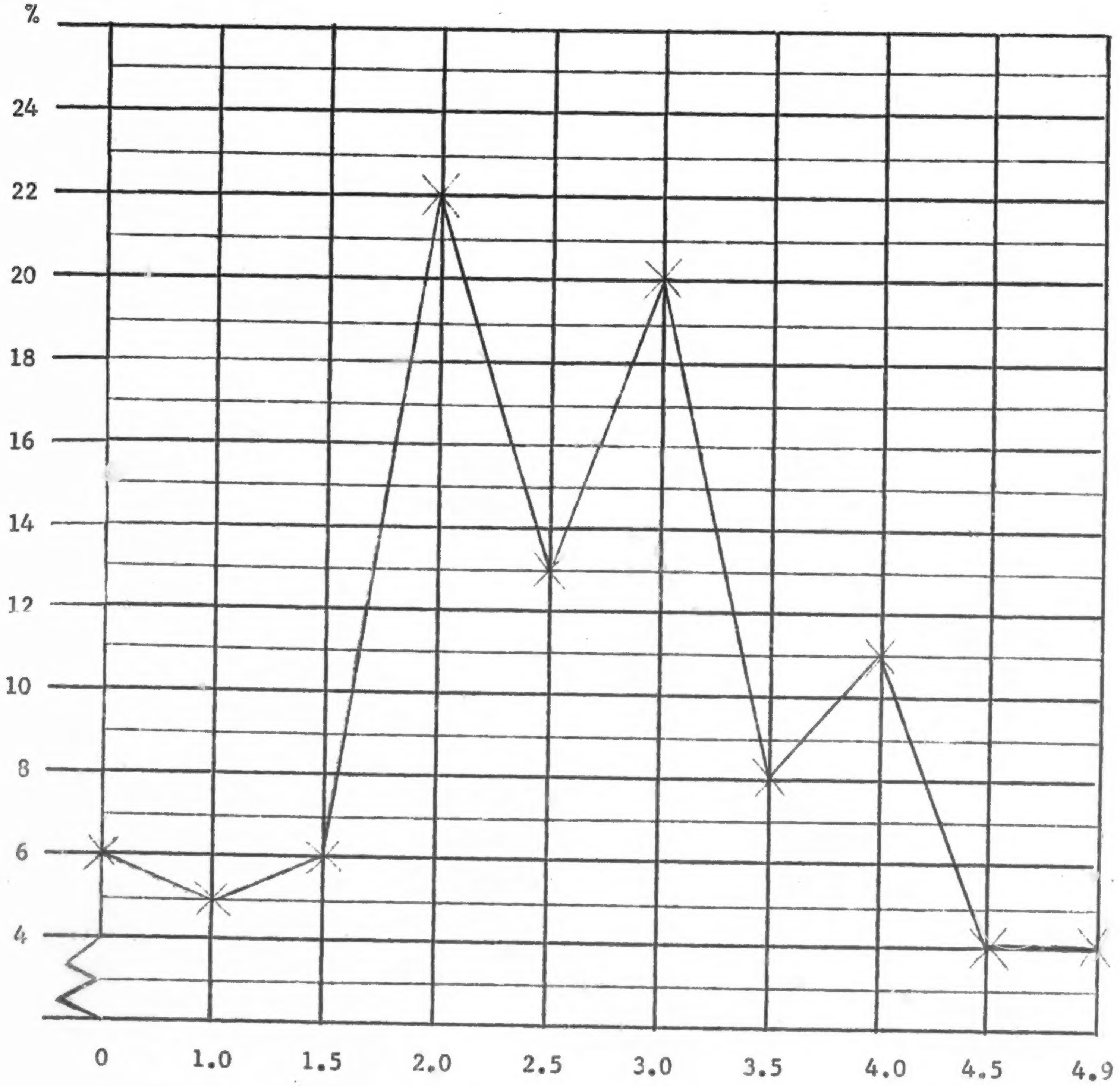


CHART V

MATHEMATICS
PERCENTAGE DISTRIBUTION OF BOYS' GRADES



Grade Point Average

attached as a portion of this report. Points of closest comparison with the various schools in the system are as follows:

Vocational Agriculture Student		High School with Similar Median or Percent	
1. Median I.Q.	5.6	South Mountain (Alhambra 5.5)	5.6
2. Median English Grade-Point Average	2.2	Alhambra	2.3
3. Median Mathematics Grade-Point Average	1.9	East	2.1
Achievement:			
4. English over-achieved	6%	Central	6%
5. Under-achieved	47%	Alhambra Carl Hayden Central	47% 48% 48%
6. Expected	47%	East Central South Mountain	47% 46% 48%
Mathematics:			
7. Over-achieved	15%	South Mountain Phoenix Union	15% 16%
8. Under-achieved	53%	East	55%
9. Expected	32%	North Central	33% 31%
Last School Attended:			
10. Arizona Elementary	67%	North	77%
11. Elementary or High School in Another State	5%	Carl Hayden South Mountain	6% 6%
12. Born in Arizona	49%	North	47%
13. Live with Both Parents	66%	West	69%
14. Median No. Children in Family	2.7	Alhambra Central East	2.7 2.6 2.8

15. Students who are Oldest Child	42%	North	42%
		Carl Hayden	41%
		South Mountain	41%
16. Families on Welfare	2%	South Mountain	2%
17. Parents Both Work	38%	Alhambra	38%
18. Mother Works	48%	Maryvale	50%
19. Families Supported by Mother	10%	Camelback	10%
20. Mothers in White Collar jobs	43%	South Mountain	46%
21. Mothers in Service Occupations	43%	Maryvale	35%
		South Mountain	33%
22. Mothers in P.T. & K. * Occupations	43%	Alhambra	11%
		Maryvale	11%
23. Mothers in Clerical Occupations	14%	Camelback	15%
		South Mountain	13%
24. Mothers in Service Industry	24%	South Mountain	25%
		Alhambra	22%
		Maryvale	19%
		South Mountain	19%
		West	19%
26. Mothers in Government	25%	North	25%
		West	26%
27. Mothers in Trade	10%	Phoenix Union	8%
28. Fathers in White Collar Jobs	15%	Phoenix Union	14%
29. Fathers in Skilled Jobs	57%	Alhambra	50%
30. Fathers in Agriculture Occupations	14%	Phoenix Union	10%
		East	9%

* Professional technical and kindred occupations

31.	Fathers in Manufacturing Industry	28%	Carl Hayden	26%
			East	26%
			South Mountain	26%
32.	Fathers in Government	31%	Maryvale	22%
			Phoenix Union	22%
33.	Fathers in Agriculture Industry	16%	Phoenix Union	8%
			South Mountain	7%
34.	Fathers in Construction	16%	East	17%
			Camelback	14%
35.	Fathers in Service Industry	9%	Alhambra	11%
			Maryvale	11%
36.	Fathers in Trade	9%	South Mountain	12%
			East	13%

South Mountain had the same median or percentage on 4 items, was closest of all schools on 6 items and differed only slightly from closest in 4 items, making it close enough to mention on 14 or 49% of the 36 items. All schools had at least one item the same except Phoenix Union and Carl Hayden and all schools were closest on at least one item. A tabular summary of the same, closest and next closest along with the number of former vocational agriculture students from each school are as follow:

	Same	Closest	Next Closest	Number of Former Vocational Agriculture Students
Alhambra	3	4	2	6
Camelback	1	1	1	2
Carl Hayden	0	2	2	4
Central	1	1	3	2
East	1	4	3	0
Maryvale	1	5	0	0

2

North	2	3	0	4
Phoenix Union	0	5	1	27
South Mountain	4	6	4	5
West	1	1	1	2
Other	-	-	-	3

From the above table, it would seem that the characteristics of the male student bodies at Alhambra and South Mountain most closely approximate the characteristics of the former vocational agricultural students. Analysis of the items on which these two schools compare closely shows two points in each school on achievement, only .1 difference in median I.Q., 8 similarities on occupation and industry for South Mountain and 4 points at Alhambra. One important similarity at South Mountain was next closest on fathers employed in agricultural industries.

A few comparisons with data developed by the anomical economic and consumer study conducted by the Arizona Republic and Phoenix Gazette* will serve to show that the sample data from the schools was quite reliable when the special nature of our sample data is taken into consideration.

The sample data implies that the youngest populations are in the Maryvale and Alhambra districts. According to the Republic and Gazette study, Maryvale High School District is located primarily in the study District 12 in which the median age of heads of household is 40.0 years compared to 46.1 for the Phoenix Metropolitan area. Only 6% of the heads of households in this district are retired while, 20% of heads of household are retired. Alhambra High School District falls in the Republic and Gazette Districts 5 and 11 which have a combined median age of 42.2 for heads of houselold. While several districts have a lower median age, they are not in the Phoenix Union High School District. In the entire Metropolitan area, only 22% of all wives work, but the high percentage of mothers working in Maryvale (50%) and Alhambra (42%) are from homes where a large proportion of the oldest children are already in high school and all children are likely to be old enough to attend school--a time when mothers normally return to the labor force.

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* Inside Phoenix, The Arizona Republic and Phoenix Gazette, 1966.

Since the comparison of personal and family characteristics was not conclusive, and no further information could be gleaned from the data originally collected, further evidence was needed to give direction for a choice of physical location for the vocational agriculture program.

SECTION IV

STUDENT INTEREST

One desirable attribute of the location of a program of vocation agriculture would be student interest in agricultural and agriculturally related occupations as a career choice. Counselors'records and personal knowledge of individual students might well be a valid source fordetermining potential interest in such a program. In order to test this hypothesis, counselors werepolled at the Maryvale High School concerning the vocational choice of male students in a randomly selected sample. The sample of male students was the same as that which has been used in other parts of this survey. In no way were these counselors informed that the desired information concerning future vocational choice was related to a study of vocational agriculture.

Information was obtained on the 80 male students in the sample. Of these, counselors were able to provide immediate information on the great majority. In instances where the counselors were not able to provide such information, the student was called in for a brief interview.

Of the 80 students, approximately 20% (15) were undecided as to their future vocational role. This is not surprising in that the sample of students included all classes at the Maryvale High School from freshmen through senior. Forty-six of the 80 students or nearly 60% indicated that they planned to attend college. In many instances the vocational choice or the choice of specific curricula in college had not been determined. Six of the students indicated that they planned to enter the military service as a vocational choice. Of the 80 students only two expressed a vocational choice that could be considered an agriculture or agriculture-related occupation.

TABLE 14

STATED VOCATIONAL CHOICE OF A SAMPLE OF
MALE MARYVALE HIGH SCHOOL STUDENTS

Students Plans or Occupational Choice	Number in Sample	Percent
Military Service	6	7
Undecided	15	19
College	46	58
(Agricultural Related)	(1)	--
(Engineering)	(10)	--
(Science)	(7)	--
(Undecided)	(11)	--
(Miscellaneous)	(18)	--
Craftsman	4	5
Agricultural Related	1	1
Miscellaneous	7	9
TOTAL	80	100

Interestingly enough, four of the students indicated vocational choices in craft occupations (electricians and mechanics) that would suggest that other programs of vocational education are equal to vocational agriculture in student interest. A number of students giving a choice of college level training were interested in technician level occupations such as electronics technicians, draftsmen, etc., that might call for technician or pre-technician vocational training.

The use of counseling records and the knowledge of counselors of the occupational choice of the students has indicated that the male students of Maryvale High School are, with less than two percent exception, not interested in vocational choices of agriculture or agriculturally-related occupations.

It is probable, however, that with a "public relations" campaign relating to the opportunities in occupations in agriculture or agriculturally-related fields the incidence of selection of career choices related to agriculture might very well be increased. However, the impact of any "public relations" campaign could similarly be predicted for any occupation or occupational field.

This test of a source of information has also indicated that counselors and counseling records may very well prove to be a valuable source of data for guidance to the District in determining where the vocational agriculture programs should be offered.

After comparing the personal characteristics of boys in all high schools in the Phoenix Union System with those of the former vocational agriculture students, it was determined that the male student body at South Mountain was most nearly like that of the former students. In order to further test cumulative records of the sample taken previously at South Mountain were examined for vocational choice. Cumulative records of the sample at Phoenix Union were also examined, since it is the only school in the system now teaching vocational agriculture.

Results of the examination of records at all three schools are tabulated in Table 15 and Table 16. In tha analysis of records at South Mountain and Phoenix Union, if no vocational choice was stated in the counseling record, information on vocational training plans was inferred from the four-year course plan contained in the record. The data, then, for these two schools is not strictly comparable to that from Maryvale, where counselors were consulted. As the talbes show, there was a high proportion of choice of crafts (or skilled trades) among the South Mountain and Phoenix Union Students. The craft choices at Phoenix Union covered a wide variety of occupations with more than one-third (37%) having chosen auto mechanics, 20% woodworking trades, 15% upholstery, and 15% electrical or electronics, including radio and T.V. repair. Well over half (55%) of those choosing crafts at South Mountain selected auto mechanics, with 17% choosing metal trades and 11% electronics.

Maryvale had two choosing agriculture related occupations--one forest ranger and one work in the produce business. South Mountain had only one choosing agriculture related work--ranger--and he was taking a college prep course. The one at Phoenix Union whose four-year course plan included two years of vocational agriculture lived in the South Mountain area. He had started at Phoenix Union to study refrigeration but had changed his major to agriculture. The student at Phoenix Union taking college preparatory work had chosen veterinary medicine.

TABLE 15

VOCATIONAL PLANS OF BOYS IN SAMPLE AT MARYVALE, SOUTH MOUNTAIN AND PHOENIX UNION HIGH SCHOOLS SPRING, 1966

Student Plans or Vocational Choice	Maryvale		South Mountain		Phoenix Union		TOTAL	
	# In Sample	Percent	# In Sample	Percent	# In Sample	Percent	# In Sample	Percent
Agriculture	--	--	--	--	1	1	1	**
Agricultural Related	1	2	--	--	--	--	1	**
Crafts	4	5	18	32	41	41	63	27
Clerical & Sales	1	1	2	4	4	4	7	3
Service Occupations	1	1	1	2	6	6	8	3
Miscellaneous	5	6	2	4	3	3	10	4
Military Service	6	8	*	--	1	1	7	3
College	47	59	25	45	21	21	93	40
Undecided	15	19	3	5	4	4	22	9
Information Not Available	--	--	5	9	18	18	23	10
TOTAL	80		56		99		235	

* One taking college preparatory for Air Force Academy shown under college.
** Less than one-half of one percent.

TABLE 16

VOCATIONAL PLANS OF COLLEGE BOUND BOYS IN SAMPLE AT MARYVALE, SOUTH MOUNTAIN AND PHOENIX UNION HIGH SCHOOLS
SPRING, 1966

Student Plans or Vocational Choice	Maryvale		South Mountain		Phoenix Union		TOTAL	
	# In Sample	Percent of All Boys In Sample	# In Sample	Percent of All Boys In Sample	# In Sample	Percent of All Boys In Sample	# In Sample	Percent of All Boys In Sample
Engineering	10	12	6	11	6	6	22	9
Science	7	9	4	7	1	1	12	5
Law	1	1	2	4	2	2	5	2
Agriculture & Related	1	--	1	2	1	1	3	1
Other	17	21	6	11	4	4	27	12
Undecided	11	14	6	11	7	7	24	10
TOTAL	80		56		99		235	

Note: Other includes such occupations as teacher, accountant, pharmacist, artist, minister and male nurse.

There is very little evidence in the data collected to point to any one school as the logical place to offer vocational agriculture. Only one of the 235 sample boys in the three high schools was actually enrolled in vocational agriculture. A total of five (2%) had chosen a vocation related to agriculture, three of which required college education.

A comparison of the vocational choices of students attending Phoenix Union from other geographic areas with the sample from all three schools show that a higher proportion had chosen crafts (41% compared to 27%); a lower proportion intended to go to college (14% compared to 40%); and that a higher proportion had chosen service occupations (7% to 3%). Only 3% of those attending Phoenix Union from other geographic areas and on whom information was available, had not yet made a vocational choice, while 12% of the others on whom information was available were still undecided.

Interest in vocational agriculture is rather limited as only 165 students in the entire Phoenix Union System are registered this semester. More than half (64%) in agriculture classes now did not voluntarily choose agriculture, as shown in Section VI of this report. Therefore, less than 1% af all boys in the Phoenix Union High School System have chosen to study vocational agriculture.

It is quite possible that vocational agriculture would attract a number of students in any school in which it was offered as has been experienced at Phoenix Union. On the follow-up study, 49% of the boys completing two years or more lived in the Phoenix Union geographic area, but the characteristic sample at Phoenix Union was quite dissimilar from that of the vocational agriculture students. No one high school service area provided a preponderance of the out-of-area vocational agriculture students, though 21% came from South Mountain.

It is probable that the changing emphasis in the vocational agricultural related businesses would have more bearing on the physical location in which agriculture is taught than past experience. It may be that agriculture related courses can be taught in several schools with related work experience taking the place of expensive laboratories.

The study of opportunities in farming and agricultural services conducted by the Arizona State Employment Service indicates that many employers feel that on-the-job training is essential to adequate preparation for farm work.

Unfortunately florists, farm implement dealers, grain and feed businesses, and several others businesses using agricultural-related occupations, were not surveyed and much of the employment opportunities for youth trained in vocational agriculture will occur in these types of establishments.

The survey does support the need for training in farm equipment operation,as employment of tractor operators was well over 600 with replacements (or turnover) of 250 last year. Employment projections in on-farm occupations overall show a continuation of the trend toward gradual loss in total employment on farms, though limited expansion is anticipated in a few occupations.

SECTION V

SLOW LEARNERS IN AGRICULTURE

Seven students among the group who had two or more years of agriculture had I.Q. stanines below four. The I.Q.'s were as follows: Stanine 1---1; Stanine 2---2; Stanine 3---4.

Those with Stanines of 1 and 2 were all from high school service areas other than Phoenix Union High School. Those with Stanines of 3 were all from the Phoenix Union High School service area.

The student with Stanine 1 I.Q. was from South Mountain High School and his converted grade-point average in agriculuure was 3.5, representing considerable over-achievement. His biggest agriculture grade was 2 and lowest was 3. His grades in English and mathematics had converted averages of 1.5. All of his mathematics was in slow learner classes and 2 of 4 semesters of English were in slow learner sections.

One with Stanine 2 was from South Mountain and one was from North High. Their converted grade-point averages were as follows:

	South Mountain	North
Agriculture	3.0	4.0
English	.43	1.0
Mathematics	.66	2.5
Slow Semesters in English	4	6
Highest English Grade*	4	4 (c)
Highest Agriculture Grade	3	1
Lowest Agriculture Grade	3	3
Highest Mathematics Grade	3 (c)	3

* Grades in specific courses not converted. (c) designates special class for slow learner.

The four students with I.Q. Stanines of 3 had the following converted grade-point averages and highest unconverted grades in English and mathematics:

	#1-	#2	#3	#4
Agriculture	4.5	2.8	3.0	3.3
English	2.5	2.6	2.1	1.6
Mathematics	2.3	1.3	3.0	2.0
Highest Agriculture Grade	1	2	3	2
Lowest Agriculture Grade	2	4	3	4
Highest English Grade	3	3 (c)	1 (c)	4
Highest Mathematic Grade	4	3	2 (c)	4

It can readily be seen that all but one of the group with I.Q.'s lower than Stanine 4 over-achieved in agriculture and that English and mathematics grades were usually either expected or under expectation.

Motivation to study agriculture is probably a very important factor. It seems, from this small group at least, that agriculture is a subject in which slow learners can do well.

Five students in the normal I.Q. range of 4 to 6 Stanines took one or more course in slow learner classes in either English or mathematics or both. Their coverted grade-point averages were as follows:

	#1	#2	#3	#4	#5
Agriculture Average	2.3	2.7	3.1	2.9	3.3
English Average	.67	2.1	1.0	1.0	2.3
Mathematics Average	1.5	2.0	2.5	1.3	2.0

Six students with I.Q.'s not available took slow learner classes in English or mathematics or both. Their converted grade-point averages were as follows:

	#1	#2	#3	#4	#5	#6
Agriculture Average	3.5	3.3	3.3	2.7	3.6	2.7
English Average	2.1	1.2	2.0	0	.63	2.8
Mathematics Average	1.0	1.7	1.0	---	2.0	2.0

All but one of those students with I.Q. not available were from other high school service areas and all five had trasferred from other high schools. Achievement was better in agriculture than in either English or mathematics for those with normal I.Q.'s as well as those with I.Q.'s not available with the exception of one getting 2.7 in agriculture and 2.8 in English.

In these 19 cases, the students did better in agriculture, even though most had to take slow learner classes in English and mathematics. From this evidence, it would seem that agriculture is a suitable subject for slow learners--particularly when they are interested enough and motivated to take four semesters of agricultue.

A large percentage of the new students in agriculture the second semester 1965-66 were registered in one or more slow learner classes and a large proportion were in agriculture apparently not of their own choice. An examination of the achievement in agriculture of these students would provide more conclusive data on the ability of slow learners to achieve in agriculture when it is not necessarily their vocational choice.

SECTION VI

ANALYSIS OF CAUSES FOR UNUSUAL INCREASE IN AGRICULTURAL COURSE ENROLLMENTS AT PHOENIX UNION HIGH SCHOOL SECOND SEMESTER 1965-1966

A list of students new to agricultural courses in the second semester, 1965-1966, from Mr. W. E. Smith of the Phoenix Union High School Vocational Agriculture Department. The list included 114 students--67 boys and 47 girls. There were new students in six agriculture classes being offered. Nearly half (54) were enrolled in General Agriculture; but well over half of the girls (70%) were enrolled in Vocational Agriculture courses.

A random sample including just over half (58) of the total new students was drawn for study of the counseling records and possible personal interview if the records did not contain adequate data for conclusions. Personal interviews were not, however, necessary.

Study of the counseling records indicated quite conclusively that the students themselves had not, except in only a very few instances, chosen to study agriculture. Of 58 records studied, only seven students--five boys and two girls--were shown to have chosen to enroll in an agriculture course. Two of the boys simultaneously enrolled in two agriculture courses during the semester.

Table 17 lists the characteristics of the sample students with respect to their course planning schedules, vocational choices, their success as students and their attendance history. Nearly three-quarters (74%) did _not_ indicate in their four-year planning schedules that any agriculture course was anticipated. More than half of the boys (53%) and 37% of the girls had chosen a vocation _not_ related

TABLE 17

Characteristics of Students Enrolled in Agriculture for the First Time Second Semester 1965-1966 By Course in Which Enrolled and By Sex

Characteristics	General Agriculture		Animal Science		Plant Science		Horti-culture		Agriculture Bus.& Law		Farm Mechanics	TOTAL		
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Boys	Girls	Total
Agriculture NOT indicated in course planning schedule	15	4	1	4	2	5	2	6	1	1	2	23	20	43
Has chosen a Vocation NOT related to Agriculture	11	0	1	1	2	4	3	3	0	1	1	18	9	27
Failed at least one course last semester	11	3	1	4	2	3	2	4	1	1	2	19	15	34
Registered in at least one "slow" class	7	2	0	2	2	5	2	3	1	1	0	12	13	25
Has history of being dropped for failures or non-attendance	5	0	0	3	1	3	2	3	0	0	1	9	9	18
Is not dropped for non-attendance	3	1	0	0	0	0	1	4	0	0	2	6	5	11
Chose Agriculture over some other course this semester	2	1	0	0	1	0	0	1	1	0	1	5	2	7
Size of Sample	21	5	1	4	3	7	4	7	1	1	4	34	24	58

Note: Two boys enrolled in two courses this semester but are shown here under only one.
(One shown under Agriculture Business and Law also taking Animal Science.)
(One shown under Farm Mechanics also taking General Agriculture)

to agriculture. Over half of the students had already registered for the first semester, 1966-1967, and only two had enrolled in agriculture course.

In the initial discussion of this sudden increase in agriculture enrollments, it was believed by the Chief Counselor that it could be explained largely by the fact that many students had failed courses the first semester and had found classes of their choice already full at the time of second semester final registration.

The theory that desired classes were full was not substantiated as only four counseling folders specifically stated that classes desired were full. An additional five students entered late and classes may have been filled, but this was not so stated.

The theory that many of the new agriculture students had failed a course last semester was substantiated as 56% of the boys and 62% of the girls had failed at least one subject the first semester this year. In at least eight folders, the counselor had stated that the student had been "given" agriculture in order to make up for credit lost in an academic subject. Two students had requested to change from the agriculture course they were enrolled in, but the counselor had felt the credit was needed and did not process the change.

Further evidence that these students had difficulty, academic or otherwise, is shown by the fact that 43% were registered in at least one "slow" learner class, 31% had a history of being dropped for failure or non-attendance, and 19% had already been dropped this semester for non-attendance.

Though the information obtained from the sample folders served to indicate that most of the new students were not taking agriculture by choice and that nearly half of them would fall into the "poor student" category, it still did not explain why the students were taking agriculture rather than some other class.

An anlysis was made of the counselors who had worked with the students enrolled in agriculture for the first time. Table 18 shows that 84% of the students under study were counselees of four of the fifteen counselors on the faculty. Almost one-third (32%) were counselees of one counselor. Further analysis, by student identification number, showed that 41% were freshmen and 51% were sophomores. (See Table 19). All of the freshman were taking General Agriculture, while the sophomores and the few upper classmen were taking primarily Vocational Agriculture.

Based upon the 5% sample of all boys at Phoenix Union High School, taken for purposes of this overall study, approximately 120 freshman boys and 85 sophomore boys had failed either English or mathematics last semester--so all of those failing a subject were not enrolled in agriculture.

Since agriculture was not the only subject which failing students were taking, a discussion was held with the Chief Counselor and one of the counselors who had a number of students in their first agriculture class. These discussions revealed that there had been a school policy change this year with respect to course offerings. Heretofore, many courses had been offered during the second semester as well as the first. Those who had failed a course during the first semester could repeat the same course during the second semester. This

TABLE 18

STUDENTS ENROLLED IN AGRICULTURE FOR THE FIRST TIME SECOND SEMESTER 1965 & 1966 - COURSES IN WHICH ENROLLED BY COUNSELOR AND BY SEX

COURSE	C O U N S E L O R																		TOTAL			Percent of Total		
	B		C		E		H		J		K		N		P		R							
	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Total	B	G	Total
Animal Science								4						3	1	1			1	8	9	2	17	8
Agriculture Business & Law			1										1	3					2	3	5	3	6	4
General Agriculture					1		1	1	4		27	9	2		1		7	1	43	11	54	64	23	47
Plant Science	1						1	2					1	3	4	5			7	10	17	11	21	15
Horticulture		1		1			2	7				1	1	1		4	1		4	15	19	6	32	17
Farm Mechanics							1						3		6				10	0	10	15	0	9
TOTAL	1	1	1	1	1	0	5	14	4	0	27	10	8	10	12	10	8	1	67	47	114	100	100	100
TOTAL OF BOTH SEXES	2		2		1		19		4		37		18		22		9				114			
Percent of Boys	2		2		2		8		6		40		12		18		12		100					
Percent of Girls		2		2		0		30		0		21		21		21		2		100				
Percent of Both Sexes	2		2		1		17		4		32		16		19		8				100			

Note: Two boys, both counselees of N, enrolled in two courses but are listed here only once.

TABLE 19

DISTRIBUTION OF NEW ENROLLMENTS IN AGRICULTURE COURSES BY COURSE, BY CLASS AND BY SEX

	Freshman		Sophomore		Junior		Senior		From Earlier Classes		Total	
	B	G	B	G	B	G	B	G	B	G	B	G
Animal Science	-	-	1	8	-	-	-	-	-	-	1	8
Agriculture Business & Law	-	-	1	2	-	1	-	-	1	-	2	3
General Agriculture	37	10	4	1	-	-	2	-	-	-	43	11
Horticulture	-	-	3	12	1	2	-	-	-	1	4	15
Plant Science	-	-	6	10	1	-	-	-	-	-	7	10
Farm Mechanics	-	-	10	-	-	-	-	-	-	-	10	-
TOTAL	37	10	25	33	2	3	2	0	1	1	67	47

Note: Two boys, both sophomores, enrolled in two classes, but are counted under only one.

year, the practice was discontinued. Those who had failed a course were unable to enroll in repeat classes as they were not offered. Nor could they enroll in second semester courses as they lacked prerequisites. The counselor stated that she had "persuaded" several students to take agriculture because they had to take something and could not repeat courses they had failed.

SUMMARY

The unusual increase in agriculture course enrollments this semester cannot be explained by a sudden increase of student interest in agriculture, as very little evidence of student interest was found.

The elimination of first semester courses forced students who had failed in one of more classes to seek course offerings not requiring prerequisites.

Four counselors apparently turned to agriculture as the solution for many of their students who were faced with the necessity of selecting a course to replace the second semester of a subject they had failed.

The "intent" of vocational agriculture legislation has been stretched considerably in that very few of the students plan to take further courses in agriculture.

Further study of course enrollment records would probably show that other subjects not requiring prerequisites had also absorbed a greater than normal number of students this semester.

SECTION VII

CONCLUSIONS AND RECOMMENDATIONS

The overall effectiveness of the vocational agriculture program at Phoenix Union High School is extremely limited if its' primary purpose is to educate high school students for a vocation in agriculture. Though the Vocational Education Act of 1963 has been interpreted to broaden the scope of vocational agriculture programs to include training for off-farm agricultural related work, it is still required that the student entering such training shall have made an appropriate vocational choice.

The expense of any vocational program is difficult to justify if students receiving the training do not have a reasonable expectation of entering the vocation.

The vocational agriculture program does seem to be very effective for the small group of students who take two years or more in agriculture. It apparently fosters ambition to get further education and to work, once school is completed. Several of the former students who were in military service or working in an occupation with which they were dissatisfied had strong intentions to enter college at the earliest possible time and several expressed the hope of owning a farm or ranch at some time in the future even though they might earn their living in some other line of work. The choice of agriculture in high school was reinforced through educational experience and the will to reach ambitious but attainable goals seems to be deep-seated.

The vocational agriculture program has little impact on the larger number of students. Much expensive training is wasted on students who only "sample" agriculture for one reason or another.

Recommendations for improvement and economy in the vocational agriculture course are as follows:

1. Institute more productive selection techniques for enrollment in vocational agriculture.
2. Review the requirements of Federal legislation covering funding for vocational agriculture with counselors in the entire school system.
3. Give more publicity to earnings of agriculture students in connection with their projects. Practically everyone knows about the Junior Achievement program and a large number are aware of the cooperative school-work programs in office work, distributive education, and industrial trades. The general public has little idea of the earnings in agriculture projects and approved work experience. More publicity would help the public to understand the value of the program and case history publicity on approved work should open up more opportunities for cooperative school-work projects. This would also provide greater opportunity for those who could not afford to buy animals or lease land to engage in approved work experience projects.

Results of the study conducted by the Arizona State Employment Service indicate that opportunities in on-farm and agricultural services industries are declining rather than increasing, as a whole.

Replacement figures were low in all occupations except production occupations, many of which are learned on the job or take a comparatively short time to learn; such as Irrigator.

It should be restated that the report of the Employment Service reproduced in Section II covers only production agriculture (commercial farms) and agricultural services. There are, of course, job opportunities related to vocational agriculture and horticulture in other industries in Maricopa County.

In the case of the agricultural-related occupations, job requirements typically would include preparation beyond that offered in vocational agriculture programs. Most commonly, these would be in the general field of sales (distributive) education and/or business (office) education. This suggests that a merging of programs at the high school level might be investigated.

The study of opportunities in farming and agricultural services conducted by the Arizona State Employment Service indicates that many employers feel that on-the-job training is essential to adequate preparation for farm work.

Unfortunately florists, farm implement dealers, grain and feed businesses, and other types of businesses using agricultural-related occupations, were not surveyed. Many of the employment opportunites for youth trained in vocational agriculture will occur in these types of establishments.

The survey does support the need for training in farm equipment operation as employment of tractor operators was well over 600 with replacements (or turnover) of 250 last year. Employment projections in on-farm occupations overall show a continuation of the trend toward gradual loss in total employment on farms, though limited expansion is anticipated in a few occupation.

Slow learners did better in agriculture, even though most had to take slow learner classes in English and mathematics. From this evidence, it would seem that agriculture is a suitable subject for slow learners--particularly when they are interested enough and motivated to take four semesters of agriculture.

A large percentage of the new students in agricultue the second semester 1965-66 were registered in one or more slow learner classes and a large proportion were in agriculture apparently not of their own choice. An examination of the achievement in agriculture of these students would provide more conclusive data on the ability of slow learners to achieve in agriculture when it is not necessarily their vocational choice.

The unusual increase in agriculture course enrollments during the second semesters, 1965-1966, cannot be explained by a sudden increase of student interest in agriculture, as very little evidence of student interest was found. The elimination of first semester courses forced students who had failed in one or more classes to seek course offerings not requiring prerequisites. Four counselors apparently turned to agriculture as the solution for many of their students who were faced with the necessity of selecting a course to replace the second semester of a subject they had failed. The "intent" of vocational agriculture legislation has thus been stretched considerably in that very few of the students plan to take further courses in agriculture.

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It is probable that the changing emphasis in the vocational agricultural related businesses would have more bearing on the physical location in which agriculture is taught than would past experience. It may be that agriculture related courses can be taught in several schools with related work experience taking the place of expensive laboratories.

It is recommended that further effort be made to discover the employment potential in these related businesses in order to tailor the vocational agriculture program more closely to the needs of the community. If employers are to be contacted or recontacted for this information, they should also be sounded out for their willingness to provide related school-work experience to supplement the present agricultural projects which are a part of the present program.

More data concerning opportunities in agricultural related businesses might well solve the dilemma of "where to offer vocational agriculture". An education program tailored to meet the needs of florists, implement dealers, farm and garden stores, etc., would be using the businesses for work experience and would obviate the necessity for expensive agricultural laboratories. These types of courses could be offered in several schools.

One physical location would still be required for farm machinery operation and repair before putting students into related work experience but most other laboratory practice could be accomplished in related work situations.

The program envisioned would be much like the present distributive education program and other school-work cooperative programs in clerical in industrial occupations. This might change the content of horticulture courses to floricultural chemistry, and salesmanship courses for farm equipment or garden supplies.

A survey of these types of businesses might well be done under the auspices of the vocational agriculture department so that cooperative-work experience situations could be developed at the same time. With certain knowledge of employer needs and work-school experience available, curriculum content could be confidently tailored for employment opportunity.

APPENDIX I

SURVEY OF FORMER PHOENIX UNION HIGH SCHOOL STUDENTS

We are conducting a survey of a scientific sample of former students at Phoenix Union High School to assist the school in its long range planning. You have been selected, on an impartial basis, to be included in this survey. Information you furnish will be held strictly confidential and will be used only in the preparation of statistical charts, etc. In no way will you, or your individual answers, be identified.

Please complete the following questionnaire and return by mail, using the enclosed, self-addressed postage paid envelope.

APPENDIX I

PUHS PLANNING SURVEY

Number ____

1. You attended Phoenix Union High School: ________ (year) TO ________ (year)

2. Have you finished your high school education? YES____ NO ____

3. Have you continued your education since leaving Phoenix Union High School? YES____ NO ____
If yes, please complete the appropriate boxes below to describe your continued education.

Kind of School	How Many years?	months?	Did you Graduate?	Are you currently enrolled?	Major field of study (specify)
College or University					
Junior College					
Vocational School					
Correspondence School					
Military Specialist					
Other High School					
Night School					
Other					

4. Are you currently a member of the Armed Forces? YES ____ NO____

5. Are you usually employed? YES ____ NO____
(Note that you may *also* be attending school in addition to being employed)

6. What is your present occupation (job, work)?________________

7. What is the nature of the business of your employer?________________

8. What other jobs have you held? ________________

9. Are you usually self-employed? YES ____ NO____
(ie: own and operate your own business or farm)
If yes, what is the nature of your business?________________

10. If you were to repeat your high school education, would you change your program of study? YES ____ NO____
If YES, please describe the changes you would make:________________

____

____

____

____

APPENDIX II

Name: Last M. First

Date of Entry

Student #

Address

___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
(1)	(2)	(3)	(4)	(5)	(6)

Ag. Projects

____

____

____

____

(7)

Data Collection Form for students enrolled in Vocational Agriculture Courses.

APPENDIX III

Student# (1)	Entry Date (2)	Birth Date (3)	Sex (4)	Last School (5)	State of Birth (6)	I.Q. (7)

Address: (8)

Tract (9)

Fin. Educ. Neighborhood (10)

Father (11)

O St Fo Gu Oth

Occupation

Employer

Mother (12)

O St Fo Gu Oth

Occupation

Employer

(16)

Phone (13)

#Moves (14)

#Children (15)

Child rank (17)

English (18)		Math. (19)	
Reg.	Spec.	Reg.	Spec.
		Other	

Other Extras (20)

Ath FFA Mu SG SWE

Data Collection Form For Posting Information

From Student Cumulative Records

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TABLE A

FAMILY SIZE AND FAMILY CHILD RANK OF CURRENT HIGH SCHOOL BOYS AND OF FORMER VOCATIONAL AGRICULTURE STUDENTS

NUMBER OF CHILDREN	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
One	3	7		1	6	3	4	1	4		29	1
Two	13	15	9	8	8	16	8	9	5	11	102	8
Three	15	20	8	18	5	15	10	17	9	7	124	10
Four	15	10	9	6	8	18	13	11	16	3	109	3
Five	9	7	5	4	4	10	4	5	6	3	57	4
Six	5	1		1	4	7	5	11	5		39	2
Over Six			1	1	1	5	5	15	9	1	38	3
Total	60	60	32	39	36	74	49	69	54	25	498	31
I.N.A	16	8	22	22	4	6	5	30	2	42	157	24
RANK												
One	28	20	13	7	16	36	20	19	22	6	187	13
Two	22	22	7	13	7	22	6	22	10	9	140	9
Three	8	11	6	5	5	8	11	11	10	8	83	3
Four	1	1	3	1	3	2	7	5	4		27	4
Five		5	2		3	3	2	3	6	1	25	
Six						2	1	5	1		9	1
Over Six			1				1	4	1	1	8	1
Total	59	59	32	26	34	73	48	69	54	25	479	31
I.N.A.	17	9	22	35	6	7	6	30	2	42	176	24

TABLE B
PERCENT DISTRIBUTION OF FAMILY SIZE AND FAMILY CHILD RANK OF CURRENT HIGH SCHOOL BOYS AND OF FORMER VOCATIONAL AGRICULTURE STUDENTS

NUMBER OF CHILDREN	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
One	5%	12%		3%	17%	4%	8%	1%	7%		6%	3%
Two	22%	25%	28%	21%	22%	22%	16%	13%	9%	44%	20%	26%
Three	25%	33%	25%	46%	14%	20%	20%	25%	17%	28%	25%	32%
Four	25%	17%	28%	15%	22%	24%	27%	16%	30%	12%	22%	10%
Five	15%	12%	16%	10%	11%	14%	8%	7%	11%	12%	11%	13%
Six	8%	2%		3%	11%	9%	10%	16%	9%		8%	6%
Over Six			3%	3%	3%	7%	10%	22%	17%	4%	8%	10%
-Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*NOTE: Total may not add to 100 per cent due to rounding

RANK	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
One	47%	34%	41%	27%	47%	49%	42%	28%	41%	24%	39%	42%
Two	37%	37%	22%	50%	21%	30%	12%	32%	19%	36%	29%	29%
Three	14%	19%	19%	19%	15%	11%	23%	16%	19%	32%	17%	10%
Four	2%	2%	9%	4%	9%	3%	15%	7%	7%		6%	13%
Five		8%	6%		9%	4%	4%	4%	11%	4%	5%	
Six						3%	2%	7%	2%		2%	3%
Over Six			3%				2%	6%	2%	4%	2%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*NOTE: Total may not add to 100 per cent due to rounding

TABLE C

EMPLOYMENT BY OCCUPATIONAL GROUP OF FATHERS OF CURRENT HIGH SCHOOL BOYS AND FORMER VOCATIONAL AGRICULTURE STUDENTS

OCCUPATIONS	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	[illegible]X UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
P.T.K.*	8	14	2	13	3	6	5	3	3	5	62	2
Managerial	6	16	3	16	2	8	6	3	2	6	68	1
Clerical	2	2	3	3	2	2	2	1		3	20	1
Sales	6	8	4	8	3	10	2		1	1	43	1
Service	4	1	3	3	2	2	2	11	3	2	33	2
Skilled	28	9	16	5	7	25	6	17	15	4	132	20
Semiskilled	1		9	1	1	5		5	5		27	1
Unskilled								5	4	1	10	2
Agriculture	1				2	1		5	2		11	5
Total Known	56	50	40	49	22	59	23	50	35	22	441	35
I.N.A.	20	18	14	12	18	21	31	49	21	45	269	20
Total Students	76	68	54	61	40	80	54	99	56	67	710	55

*P.T.K. -- Professional, Technical and Kindred Occupations

TABLE D

PERCENT DISTRIBUTION OF EMPLOYMENT BY OCCUPATIONAL GROUP OF FATHERS OF CURRENT HIGH SCHOOL BOYS AND FORMER VOCATIONAL AGRICULTURE STUDENTS

OCCUPATIONS	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
P.T.K.*	14%	28%	5%	27%	14%	10%	22%	6%	9%	23%	15%	6%
Managerial	11%	32%	8%	33%	9%	14%	26%	6%	6%	27%	17%	3%
Clerical	4%	4%	8%	6%	9%	3%	9%	2%		14%	5%	3%
Sales	11%	16%	10%	16%	14%	17%	9%		3%	5%	11%	3%
Service	7%	2%	8%	6%	9%	3%	9%	22%	9%	9%	8%	6%
Skilled	50%	18%	40%	10%	32%	42%	26%	34%	43%	18%	32%	57%
Semiskilled	2%		23%	2%	5%	8%		10%	14%		7%	3%
Unskilled								10%	11%	5%	2%	6%
Agriculture	2%				9%	2%		10%	6%		3%	14%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*P.T.K. -- Professional, Technical and Kindred Occupations

TABLE E

EMPLOYMENT BY OCCUPATIONAL GROUP OF MOTHERS OF CURRENT HIGH SCHOOL BOYS AND OF FORMER VOCATIONAL AGRICULTURE STUDENTS

OCCUPATIONS	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
P.T.K.*	3	9		2	2	4	9	1	3	2	35	2
Managerial	2	1			1	1		1		2	8	1
Clerical	9	3	7	7	6	14	4	1	2	7	60	3
Sales	1	3	3	1		3		1	2	2	16	2
Service	8	3	3	1	1	6	7	16	5	1	51	9
Skilled			1	2		3		2			8	1
Semiskilled	3	1	1		1	3			2	1	12	3
Unskilled	1							4	1		6	
Agriculture											1	1
Total Mothers Employed	27	20	15	13	11	34	20	27	15	15	197	21
Housewives	29	37	31	30	17	36	17	40	35	12	284	21
Total Known	56	57	46	43	28	70	37	67	50	27	481	42
I.N.A.	20	11	8	18	12	10	17	32	6	40	174	13
Total Students	76	68	54	61	40	80	54	99	56	67	655	55

*P.T.K. -- Professional, Technical and Kindred Occupations

TABLE F

PERCENT DISTRIBUTION OF EMPLOYMENT BY OCCUPATIONAL GROUP OF MOTHERS OF CURRENT HIGH SCHOOL BOYS AND OF FORMER VOCATIONAL AGRICULTURE STUDENTS

OCCUPATION	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
P.T.K.*	11%	45%		15%	18%	12%	45%	4%	20%	13%	18%	10%
Managerial	7%	5%			9%	3%		4%		13%	4%	5%
Clerical	33%	15%	47%	54%	55%	41%	20%	4%	13%	47%	30%	14%
Sales	4%	15%	20%	8%		9%		4%	13%	13%	8%	10%
Service	30%	15%	20%	8%	9%	18%	35%	59%	33%	7%	26%	43%
Skilled			7%	15%		9%		7%			4%	5%
Semiskilled	11%	5%	7%		9%	9%			13%	7%	6%	14%
Unskilled	4%							15%	7%		3%	
Agriculture								4%			1%	
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*P.T.K. -- Professional, Technical and Kindred Occupations

NOTE: Totals may not add to 100 per cent due to rounding

TABLE G

INDUSTRY OF EMPLOYMENT OF FATHERS OF CURRENT HIGH SCHOOL BOYS AND OF FORMER VOCATIONAL AGRICULTURE STUDENTS

INDUSTRY	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
Construction	4	5	8	2	4	6	8	6	8	3	54	5
Service	6	6	2	9	1	7	5	10	2	6	54	3
Agriculture					1	2		4	3		10	5
Manufacturing	19	11	10	4	6	15	7	4	11	9	96	9
F.I.R.E.*	2	1	1	5	1	3	1	2	2	2	20	
Trade	11	6	7	7	3	14	5	8	5	4	70	3
T.C.P.U.**	6	4	3	5	2	2	3	2	4	1	32	1
Government	7	4	6	5	5	14	7	11	6	3	68	5
Mining	1		1					1	1		4	1
Total Known	56	37	38	37	23	63	36	48	42	28	408	32
I.N.A.	20	31	16	24	17	17	18	51	14	39	270	23
Total Students	76	68	54	61	40	80	54	99	56	67	710	55

*F.I.R.E. -- Finance, Insurance and Real Estate

**T.C.P.U. -- Transportation, Communications, and Public Utilities

TABLE H

PERCENT DISTRIBUTION OF INDUSTRY OF EMPLOYMENT OF FATHERS OF CURRENT HIGH SCHOOL BOYS AND OF FORMER VOCATIONAL AGRICULTURE STUDENTS

INDUSTRY	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
Construction	7%	14%	21%	5%	17%	9%	22%	12%	19%	11%	13%	16%
Service	11%	16%	5%	24%	4%	11%	14%	21%	5%	21%	13%	9%
Agriculture					4%	3%		8%	7%		2%	16%
Manufacturing	35%	30%	26%	11%	26%	24%	19%	8%	26%	32%	24%	28%
F.I.R.E.*	4%	3%	3%	14%	4%	5%	3%	4%	5%	7%	5%	
Trade	19%	16%	19%	19%	13%	22%	14%	16%	12%	14%	17%	9%
T.C.P.U.**	11%	11%	8%	14%	9%	3%	8%	4%	9%	4%	8%	3%
Government	13%	11%	16%	14%	21%	22%	20%	22%	14%	11%	17%	16%
Mining	2%		3%					2%	2%		4%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*F.I.R.E. -- Finance, Insurance and Real Estate

**T.C.P.U. -- Transportation, Communications, and Public Utilities

NOTE: Totals may not equal 100 per cent due to rounding

TABLE I

EMPLOYMENT BY INDUSTRY GROUP OF MOTHERS OF CURRENT HIGH SCHOOL BOYS AND OF FORMER VOCATIONAL AGRICULTURE STUDENTS

MOTHERS' INDUSTRY	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
Construction							2			2	4	
Service	5	1	6	5	2	9	7	16	4	3	58	6
Agriculture			1					1			2	
Manufacturing	3	3	1		2	6	2	5	3	3	28	4
F.I.R.E.*		1		1	1	2	1				6	1
Trade	7	2	2	3	2	8	1	2	6	5	38	3
T.C.P.U.**	3				2		3			1	9	
Government	5	4			1	7	5	1	3	4	30	5
Total Mothers Working	23	11	10	9	10	32	21	25	16	18	175	19
Housewives	29	37	31	30	17	36	17	40	35	12	284	21
Total Mothers Known	52	48	41	39	27	68	38	65	51	30	459	40
I.N.A.	24	20	13	22	13	12	16	34	5	37	196	15
Total Students	76	68	54	61	40	80	54	99	56	67	655	55

*F.I.R.E. -- Finance, Insurance and Real Estate

**Transportation, Communications and Public Utilities

TABLE J

PERCENT DISTRIBUTION OF EMPLOYMENT BY INDUSTRY GROUP OF MOTHERS OF CURRENT HIGH SCHOOL BOYS AND OF FORMER VOCATIONAL AGRICULTURE STUDENTS

MOTHERS' INDUSTRY	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	TOTAL FOR SYSTEM	VOCATIONAL AGRICULTURE
Construction							10%			11%	2%	
Service	22%	9%	60%	56%	20%	28%	33%	64%	25%	17%	33%	32%
Agriculture			10%					4%			1%	
Manufacturing	13%	27%	10%		20%	19%	10%	20%	19%	17%	16%	21%
F.I.R.E.*		9%		11%	10%	6%	5%				3%	5%
Trade	30%	18%	20%	33%	20%	25%	5%	8%	38%	28%	22%	16%
T.C.P.U.**	13%				20%		14%			6%	5%	
Government	22%	36%			10%	22%	24%	4%	19%	22%	17%	26%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

*F.I.R.E. -- Finance, Insurance and Real Estate

**Transportation, Communications and Public Utilities

NOTE: Total may not add to 100 per cent due to rounding

TABLE K

FORMER VOCATIONAL AGRICULTURE STUDENTS ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta- nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9								16 = 29%[2]				0	0%
8												0	0%
7					1		2	1				4	7%
6			1		2	3	3		1			10	18%
5					3		1	2	1			7	13%
4						3	1	2				6	11%
3						2	1	1				4	7%
2									1	1		2	4%
1			2 = 4%[1]					1				1	2%
IQnot Avail					3	5	6	2	2	2	1	21	38%
Total	0 0%	0 0%	1 2%	0 0%	9 16%	13 24%	14 25%	9 16%	5 9%	3 5%	1 2%	55	

MATHEMATICS

IQ sta- nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9								21 = 38%[2]				0	0%
8												0	0%
7						2		2				4	7%
6				1	1	3		4	1			10	18%
5			2			1	1	2	1			7	13%
4						1		4	1			6	11%
3						2		2				4	7%
2						1				1		2	4%
1			4 = 7%[1]					1				1	2%
IQnot Avail				2		2	5	6	3	1	2	21	38%
Total	0 0%	0 0%	2 4%	3 5%	1 2%	12 22%	6 11%	21 38%	6 11¢	2 4%	2 4%		

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[1] Over Achievement

[2] Under Achievement

TABLE L

ALHAMBRA HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta- nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	2	1	2		1							6	8%
8			1	2	1		32 = 47%[2]					4	5%
7			2			1		1				4	5%
6			1		4	3	5	1				14	18%
5				1	5	4	2	1	1		1	15	20%
4				1	1	3	8	1	3	1	1	19	25%
3							2	2	2	1		7	9%
2									1			1	1%
1		1 = 1%[1]										0	0%
IQnot Avail				1	2					1	2	6	8%
TOTAL	2 3%	1 1%	6 8%	5 7%	14 18%	11 15%	17 22%	6 8%	7 9%	3 4%	4 5%	76	

MATHEMATICS

IQ Sta- nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	3	1			1	1						6	8%
8		1	1		2		19 = 28%[2]					4	5%
7					1	1	1		1			4	5%
6	1	1	2	1	4	2	2		1			14	18%
5				2	3	3	3	1		1	2	15	20%
4				2	3	1	8		3	1	1	19	25%
3					1		6					7	9%
2							1					1	1%
1		4 = 6%[1]										0	0%
IQnot Avail					2		1			1	2	6	8%
TOTAL	4 5%	3 4%	3 4%	5 7%	17 22%	8 11%	22 29%	1 1%	5 7%	3 4%	5 7%	76	

[1] Over Achievement

[2] Under Achievement

TABLE M

CAMELBACK HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	3						11 = 20%[2]					3	4%
8	1	2	4	4	1	1						13	19%
7			2	1	1	1	1					6	9%
6		1	2		5	3	2	1				14	20%
5			1	2	4	4	1	1			1	14	20%
4		1				1	2					4	6%
3							1					1	1%
2							1					1	1%
1		6 = 11%[1]										0	0%
IQnot Avail		1	4	1	1	2	2		1			12	18%
TOTAL	4 6%	5 7%	13 19%	8 12%	12 18%	12 18%	10 15%	2 3%	1 1%		1 1%	68	100%

MATHEMATICS

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	2	1					20 = 36%[2]					3	4%
8	1	1	7	1	1		1	1				13	19%
7	1			4		1						6	9%
6	1	1			2	3	4	2		1		14	20%
5				1	2	3	5	2			1	14	20%
4					1	1		1	1			4	6%
3							1					1	1%
2					1							1	1%
1		5 = 9%[1]										0	0%
IQnot Avail	1	1	2	1	2	1	3		1			12	18%
TOTAL	6 9%	4 6%	9 13%	7 10%	9 13%	9 13%	14 20%	6 9%	2 3%	1 1%	1 1%	68	98%

[1] Over Achievement

[2] Under Achievement

TABLE N

CARL HAYDEN HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH
Grade Point Average

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9				1								1	2%
8		1	1			1	22 = 48%[2]					3	6%
7					2	1						3	6%
6			4	1	1		3			1	1	11	20%
5			1	1	2	2	1					7	13%
4					1	1	5		4			11	20%
3						3	2	2	3			10	19%
2							1					1	2%
1		5 = 11%[1]										0	0%
IQnot Avail					2		2	1		1	1	7	13%
Total	0 0%	1 2%	6 11%	3 6%	8 15%	8 15%	14 26%	3 6%	7 13%	2 4%	2 4%	54	

MATHEMATICS

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9				1								1	2%
8		1	2				13 = 30%[2]					3	6%
7				1	1	1						3	6%
6			2	1	2	1	3				2	11	20%
5	1					3	1				2	7	13%
4			1		2	2	2	2	1	1		11	20%
3						5	4	1				10	19%
2					1							1	2%
1		5 = 12%[1]										0	0%
IQnot Avail					2	1	2	1			1	7	13%
Total	1 2%	1 2%	5 9%	3 6%	8 15%	13 24%	12 22%	4 7%	1 2%	1 2%	5 9%	54	

[1] Over Achievement

[2] Under Achievement

TABLE O

CENTRAL HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	2	2	4		1		26 = 48%[2]					9	15%
8	2		1	3	1	1						8	13%
7			2		4	2	1	1				10	16%
6	1				1	2	2					6	10%
5				3	2	2	3			1		11	18%
4					1		3		4			8	13%
3								1	1			2	3%
2												0	0%
1		3 = 6%[1]										0	0%
IQnot Avail					1	2	2				2	7	11%
Total	5 8%	2 3%	7 11%	6 10%	11 18%	9 15%	11 18%	2 3%	5 8%	1 2%	2 3%	61	

MATHEMATICS

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	2		4	2	1		34 = 63%[2]					9	15%
8	1		1	2		3	1					8	13%
7			3	1		3	1	2				10	16%
6			1		1		2			2		6	10%
5			2	1	2	1	2	2		1		11	18%
4					2		3	1		2		8	13%
3								1	1			2	3%
2												0	0%
1		3 = 6%[1]										0	0%
IQnot Avail					3	1			1		2	7	11%
Total	3 5%	0 0%	11 18%	6 10%	9 15%	8 13%	9 15%	6 10%	2 3%	5 8%	2 3%	61	

[1] Over Achievement

[2] Under Achievement

TABLE P

EAST HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	2											2	5%
8				1			12 = 30%^{2}					1	3%
7	1		3						1			5	13%
6	1		2		1	1	3		1			9	23%
5	1		3		5	2	1		1	1		14	35%
4			1		2		4					7	18%
3												0	0%
2									1			1	3%
1			9 = 23%^{1}						1			1	3%
IQnot Avail												0	0%
Total	5 13%	0 0%	9 23%	1 3%	8 20%	3 8%	8 20%	0 0%	5 13%	1 3%		40	

MATHEMATICS

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	2											2	5%
8				1			21 = 55%^{2}					1	3%
7	1		1		2					1		5	13%
6					3		5	1				9	23%
5					2	1	6		1	3	1	14	35%
4			1		1	2	2			1		7	18%
3												0	0%
2										1		1	3%
1			2 = 5%^{1}								1	1	3%
IQnot Avail												0	0%
Total	3 8%	0 0%	2 5%	1 3%	8 20%	3 8%	13 33%	1 3%	1 3%	6 15%	2 5%	40	

^{1}Over Achievement ^{2}Under Achievement

TABLE Q

MARYVALE HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9		1	3				29 = 39%[2]					4	5%
8			4	3	1							8	10%
7		1	3	2	4	1	2					13	16%
6			1		11	2	3					17	21%
5			1		7	2	11	3				24	30%
4						2	5	1		1		6	8%
3							1			1		2	3%
2												0	0%
1		3 = 4%[1]										0	0%
IQnot Avail			1	1	3		1					6	8%
Total	0 0%	2 3%	13 16%	6 8%	26 33%	7 9%	20 25%	4 5%	0 0%	2 3%	0 0%	80	

MATHEMATICS

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	2		2				21 = 29%[2]					4	5%
8		3	2	2					1			8	10%
7		1	1	3	4	1	3					13	16%
6			2	1	10	2	2					17	21%
5			3	2	5	5	5	3		1		24	30%
4					4		1	1				6	8%
3					1			1				2	3%
2												0	0%
1		6 = 8%[1]										0	0%
IQnot Avail			1		3		1	1				6	8%
Total	2 3%	4 5%	11 14%	8 10%	27 34%	8 10%	12 15%	6 8%	1 1%	1 1%		80	

[1] Over Achievement

[2] Under Achievement

TABLE R

NORTH HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9												0	0%
8		2	1		2		27 = 53%[2]					5	9%
7			2	1	2	3	2					10	19%
6				1	4	4	5	3				17	31%
5				2		4	5	1				12	22%
4							4			2		6	11%
3												0	0%
2					1							1	2%
1		1 = 2%[1]										0	0%
IQnot Avail			1		1						1	3	6%
Total	0 0%	4% 2%	4 7%	4 7%	10 19%	11 20%	16 30%	4 7%	0 0%	2 4%	1 2%	54	

MATHEMATICS

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9												0	0%
8		2	1		2		31 = 61%[2]					5	9%
7			1	1	1	4	2	1				10	19%
6			1	1	1	5	6	2		1		17	31%
5			1	1	1	1	6	1		1		12	22%
4					1				5			6	11%
3												0	0%
2					1							1	2%
1		3 = 6%[1]										0	0%
IQnot Avail			1				1				1	3	6%
Total	0 0%	2 4%	5 9%	3 6%	7 13%	10 19%	15 28%	4 7%	5 9%	2 4%	1 2%	54	

[1] Over Achievement

[2] Under Achievement

TABLE S

PHOENIX UNION HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Stanines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9							36 = 49%[2]					0	0%
8												0	0%
7		2	1	2		2	1					8	8%
6			1		7		5					13	13%
5	1		1	1	2	2	1	2		2		12	12%
4			1	1	1		3	3	6	2	3	20	20%
3			1			2	6	5	1	3	4	22	22%
2							1	1	3			5	5%
1	7 = 9%[1]								1		2	3	3%
IQnot Avail				2		2	5	2	2	1	2	16	16%
Total	1 1%	2 2%	5 5%	6 6%	10 10%	8 8%	22 22%	13 13%	13 13%	8 8%	11 11%	99	

MATHEMATICS

IQ Stanines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9							33 = 45%[2]					0	0%
8												0	0%
7			4	1	1	1	1					8	8%
6			3		5	1	1	3				13	13%
5	1		3			2	3		1	2		12	12%
4		1	1		2	2	5	1	1	3	4	20	20%
3				1	1	2	6	2	3	3	4	22	22%
2					1		1			3		5	5%
1	12 = 16%[1]				1						2	3	3%
IQnot Avail				3	3	2	2		1	1	4	16	16%
Total	1 1%	1 1%	11 11%	5 5%	14 14%	10 10%	19 19%	6 6%	6 6%	12 12%	14 14%	99	

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[1] Over Achievement

[2] Under Achievement

TABLE T

SOUTH MOUNTAIN HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9								10 = 37%[2]				0	0%
8		1		1		1		1				4	7%
7		2		1	1	1						5	9%
6				1			2					3	5%
5					1	2	1					4	7%
4				1	1	2		1	1			6	11%
3				1				1		1		3	5%
2				1			1					2	4%
1			4 = 15%[1]									0	0%
IQnot Avail		1	2	2	4	2	9	2	2	3	2	29	52%
Total		4 7%	2 4%	8 14%	7 13%	8 14%	13 23%	5 9%	3 5%	4 7%	2 4%	56	

MATHEMATICS

IQ Sta-nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9								8 = 30%[2]				0	0%
8		1				2		1				4	7%
7			1	2	2							5	9%
6		1				1	1					3	5%
5					3					1		4	7%
4			1			2	3					6	11%
3							3					3	5%
2				1		1						2	4%
1			4 = 15%[1]									0	0%
IQnot Avail	2	1	3	0	2	4	6	0	0	1	10	29	52%
Total	2 4%	3 5%	5 9%	3 5%	7 13%	10 18%	13 23%	1 2%	0 0%	2 4%	10 18%	56	

[1] Over Achievement

[2] Under Achievement

TABLE U

WEST HIGH SCHOOL
ACHIEVEMENT IN ENGLISH (TOP) AND MATHEMATICS (BOTTOM)

ENGLISH

Grade Point Average

IQ Sta- nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	2	1	2	1								6	9%
8	1	3	1	2	1		21 = 34%[2]					8	12%
7			4	3	2	1	1	1				12	18%
6			3	1	5	2		1				12	18%
5		1	1	1	3	4	1	2				13	19%
4							6	1				7	11%
3								1	2			3	4%
2							1					1	1%
1		6 = 10%[1]										0	0%
IQnot Avail				1	2	1	1					5	7%
Total	3 4%	5 7%	11 16%	9 13%	13 19%	8 12%	10 15%	6 9%	2 3%	0 0%	0 0%	67	

MATHEMATICS

IQ Sta- nines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Grades not Avail.	TOTAL	%
9	1	3			1		1					6	9%
8			4	4			17 = 27%[2]					8	12%
7		1	2	3	3		2		1			12	18%
6		2		1	6	1	1	1				12	18%
5	1			1	6	2	1	1	1			13	19%
4			2	1			2	1	1			7	11%
3									2	1		3	4%
2							1					1	1%
1		6 = 10%[1]										0	0%
IQnot Avail				1	2	1	1					5	7%
Total	2 3%	6 9%	8 12%	11 16%	18 27%	4 6%	9 13%	3 4%	5 7%	1 1%	0 0%	67	

[1] Over Achievement

[2] Under Achievement